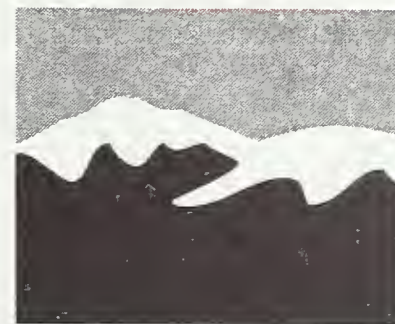


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# Clearwater

Newsletter for Water and Wastewater Operators

Spring 2001

Spring 2001  
Volume XXXI, Issue 1

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## Pure Water History

By Marc Golz, Senior Engineer



Sometime in prehistory man became aware of the importance of pure water. This awareness may have arisen purely from the senses of sight, taste and odor. Eventually, some cultures began to prefer purified water that tasted better. It is difficult to be certain what civilization first began to routinely practice water collection and purification. However, Egyptian artifacts provide some of the earliest recorded knowledge of water treatment. Pictured on the walls of tombs in Egypt, dating to 1450 B.C., is evidence that the Egyptians practiced sedimentation by allowing impurities in the water to settle out in large vessels. The purified water was then siphoned off the top of the vessels for use. In the first century B.C., Rome conquered the city of Alexandria in Egypt and found the city underlain by aqueducts. These Egyptian aqueducts brought water from the Nile to cisterns where the water was clarified by sedimentation for use by the ruling classes.

Of course the Romans are famous for their civil works (buildings, transportation systems, and water and wastewater systems). Most schoolchildren learn about the arched aqueducts that provided water to Rome and its cities across the Roman Empire. One of the first . . .

## Climate Change – Are You Ready?

Weather is defined as the hourly or daily fluctuation in atmospheric conditions. By comparison, climate is described as the average weather conditions of a region over many years. Weather conditions may vary dramatically, even though climate changes little. Weather variability has to do with the annual weather extremes, i.e., how cold and snowy one winter is compared to the extreme events of the past.

Experts disagree on whether either long-term climate change or a trend toward more weather variability is occurring. Some believe we have experienced a period of stable weather in the past century and could be beginning a period in which more extreme rain, temperature and wind events will occur, even though the average climate might be unchanged. An example of a long-term climate change would be a trend toward dryer, warmer winters occurring over a period of many years.

Climate change would have many impacts on modern society, but perhaps the biggest result of any climate change would be the effects on water supplies. A trend toward wetter, colder climate increases the incidence of flooding. On the other hand, a trend toward a dryer, warmer climate could lead to water shortages. Experts generally agree that we are better prepared to deal with floods than droughts, in part because water rights laws do not encourage the sharing of . . .

*History and Climate - continued on page 31*



# Watershed Planning and Source Water Protection

Watershed management and source water protection go hand in hand; you can't really have one without considering the other because drinking water sources are within watersheds and, conversely, watersheds supply drinking water.

State and federal resource agencies have moved toward using watersheds as the basic organizational unit around which they develop certain management activities. In the most basic form the approach uses watersheds to define geographical areas that share common physical, cultural, and social characteristics. These common characteristics enable decision-makers and the public to quickly understand resource protection issues within the context of their lives and surroundings. Watersheds are a logical approach for organization that can lead to significant cost savings in resource protection program implementation through shared research, data, and management planning by resource managers.

In Montana, implementation of the source water assessment program is based on a watershed approach following these key steps:

- 1) identify SWAP implementation priorities within each major watershed (Figure 1)
- 2) assign oversight responsibilities to program staff for source water assessments within each of the major watersheds
- 3) track program implementation within each watershed and provide bi-annual progress updates to ensure that deadlines are met, and share program implementation

information with other programs and agencies. Steps one and two were completed in the first quarter of 2001. The remaining steps are part of the program implementation.

Utilizing a watershed approach:

- ❑ allows easier management of SWAP implementation by dividing the state into manageable units.
- ❑ allows and fosters easier coordination with other programs at DEQ.
- ❑ encourages coordination of PWS management plans within watershed sub-areas.
- ❑ allows DEQ to track implementation through bi-monthly status reports from each watershed coordinator.
- ❑ is consistent with the federal Clean Water Action Plan and the Montana Watershed Management Plan.
- ❑ helps meet the federal requirement that the state use an integrated watershed approach for assessment, protection and remediation that is well integrated with other water or natural resource programs.
- ❑ helps the state effectively incorporate a variety of organizations and interests into its implementation of nonpoint source activities and projects as required by the federal Clean Water Act.

If you would like more information on source water assessments and watershed planning, contact Joe Meek at 406-444-6697.

## Big Sky Clearwater

Volume XXXI, Issue 1  
Spring 2001

Big Sky Clearwater, a publication of the Montana Department of Environmental Quality, is for water and wastewater operators. The Department welcomes articles of interest and suggestions for articles related to water quality, water and wastewater treatment and the water environment. Articles may consist of your thoughts or ideas about treatment plant experiences, technical papers or any information that may benefit other operators or managers. Please submit articles 30 days before publication (August 1 and March 1).

Please contact DEQ at 406- 444-6697 or write to:

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Metcalf Building  
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Helena, MT 59620-0901

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Editors:  
Eric Minetti (Spring Issue)  
Bill Bahr (Fall Issue)

MAJOR WATERSHEDS OF MONTANA

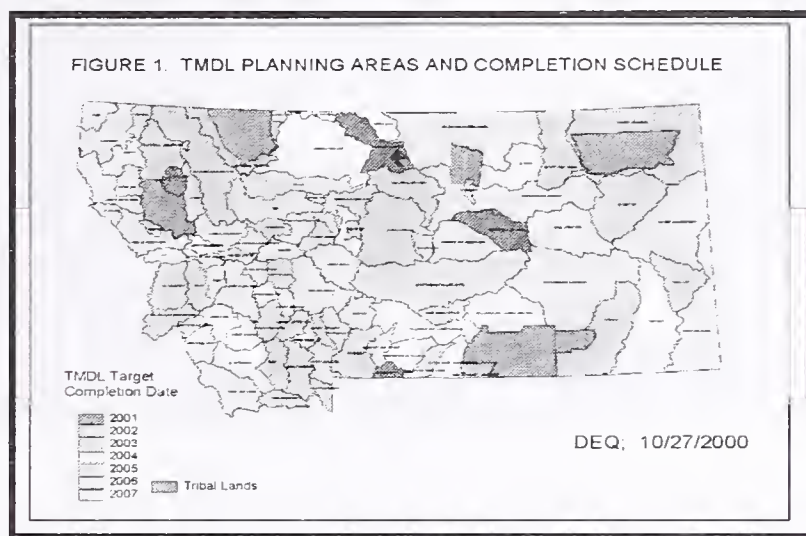


Figure 1



## DEQ Announces Watershed Planning Schedule

In order to meet the deadline established by state law and a federal court order, the Watershed Management Section prepared a schedule, using a watershed approach, to develop water quality restoration plans for every impaired water body in Montana by 2007. The state is divided into 91 "Watershed Planning Units." All impaired water bodies requiring a Total Maximum Daily Load (TMDL) plan will be included in a watershed restoration plan.



For clarification, the technical definition of a TMDL is *the total amount of pollutant that a waterbody may receive from any source without exceeding water quality standards*. A TMDL calculation includes a margin of safety and accounts for seasonal variations and contributions from all point, nonpoint and natural sources.

The non-point source program relies on local watershed groups, using a community approach, in order to achieve water quality standards. Watershed groups are comprised of citizens who have an interest in the planning process. DEQ, directed by state law, requests the participation of farmers, ranchers, environmentalists and recreationists, as well as representatives of DNRC, the U.S. Forest Service, Bureau of Land Management, municipalities and the forest, mining and tourism industries. Each watershed group, however, reflects local land and water uses. Where there is no local interest, DEQ will develop a plan. More information about the schedule can be found on DEQ's website at [http://www.deq.state.mt.us/ppa/watershed%20mgmt/tmdl\\_sched.htm](http://www.deq.state.mt.us/ppa/watershed%20mgmt/tmdl_sched.htm)

Three new Watershed Management Section staff will assist with the water quality restoration plans. Please contact Dean Yashan, watershed planning coordinator for the Yellowstone Basin, at 444-5317; Ron Steg, watershed coordinator on the west slope, at 444-7423, or Jim Bauermeister, section information and education specialist, at 444-667.

## SWDAR Funding Available

The Planning, Prevention and Assistance Division at DEQ has funds available that public water supplies can use to help with completing source water delineation and assessment reports (SWDARs). These reports describe the source of water that reaches your intake or well(s), identifies potential contaminant sources, and assesses the susceptibility of your water to contamination.

*Most systems agree that a map showing the wells or intake, as well as potential contaminant sources, assists them in understanding the vulnerability of their water system. The standard report also includes a table that prioritizes contaminant sources.*

A city engineer, utility department, planning department, (or even a GIS program), can help complete these reports. Also, a system could use the funds to hire a consulting hydrogeologist or engineering firm.

Proposals will be accepted for the development of source water delineation and assessment reports from: 1) community or non-community non-transient public water systems; 2) local governments; or, 3) state or federal research entities or not-for-profit organizations. To qualify the proposal should exhibit some or most of the following characteristics: high or moderate source water sensitivity, high number of water system users, resolve to develop a source water protection plan, intent to complete delineation and assessments for multiple PWSs under a single project.

Proposals are scored based on criteria established by the Montana Source Water Protection Program and must meet a minimum score to qualify for funding. Once approved, a project is implemented through a contract between DEQ and the PWS or a sponsoring entity.

DEQ encourages PWSs to join forces wherever possible to get more than one report completed under a single project. If you are a transient PWS, you are not eligible for direct funding, but you may be able to partner with a nearby community system. Typically there is \$3,000 available for a community PWS to complete the report.

You may ask if there are strings attached. There always are! We need assurance that you are serious about using the funds wisely, so we expect you have a stake in the project. Each PWS will need to contribute at least 40% of the project cost. This doesn't need to be a cash outlay; it can be "in kind" service such as the cost of staff time needed to support the project. For cost effectiveness, we also ask that systems try to complete multiple reports under a single project.

To apply for funding, call Joe Meek at DEQ (406-444-6697) for information on how to put together a project proposal. He can provide you with a proposal description and a sample format to follow.



# The Map Query System:

## A Better Tool for Finding Information on the Web

By Jim Stimson, Source Water Protection Program

### The Problem

Looking for something you need on the World Wide Web (WWW) can be a maddening experience. It can be an amplified version of a trip to a super-store or mega-mall. For people that love to go shopping for pure recreational pleasure, the mega-stores are dreams-come-true. For other folks simply trying to find a specific product or item, these stores are nightmares-become-reality. It's like dying of thirst when you're in the middle of the ocean. You are surrounded by too much stuff that doesn't help solve your problem. For many of us, finding information on the web is just that type of experience. There are vast numbers of organizations offering a myriad of services and data sources. But how do you find what you really need and where is the information provided ready-to-use?

### Some Solutions and New Tools

If you're interested in a specific location in Montana and want to access information on water, land, and other natural resources around that location, there are several new web-based tools available. This article will focus on the Source Water Protection (SWP) Map Query System (MQS), developed cooperatively by DEQ's Source Water Protection Program and the State Library's NRIS Program. There are other web-based applications available from NRIS that are not discussed in this article but will be of interest to the reader. They can be accessed at <http://nr.is.state.mt.us/interactive.html>.

### The Map Query System (MQS)

The MQS makes it easy to find a specific public water supply (PWS) and display information that exists for the surrounding area. A variety of information can be displayed including:

- Septic tank density
- Underground Storage Tanks (UST) with leaking tanks (LUST) identified
- Petroleum pipelines
- Wells in the area with reports on average depth and the number of wells drilled each year

In addition to this list, more than 20 other data sets can be accessed through the MQS (see **Figure 2**). The MQS was developed to help evaluate each PWS's susceptibility to potential contaminant sources. However, the MQS is a useful tool for displaying information that can help answer a wide range of questions related to land and water resources.

### How The MQS Works

Basically, the MQS builds a map after the user makes three selections. First, the user picks the PWS of interest from a list, then selects the size of the area around the PWS that is of interest, and then chooses the principal data layer to be displayed on a map.

For example, **Figure 1** shows the MQS main menu. After you select a PWS name, in this case City of Billings, you click on the button labeled "Select By

Figure 1

Name" to move to a screen (not shown) that lets you select the size of the area of interest. This area is referred to as a buffer distance. As soon as a buffer distance is selected, the MQS presents a data list (**Figure 2**).

Figure 2

Map - continued on page 5



## Map - continued from page 4

Any data layer selected from the list is displayed on the map within the buffer zone. For example, selecting "Groundwater Wells" in Figure 2 prompts the MQS to display a simple map of the Billings area within the buffer zone and includes major roads, streams, hydrologic unit boundaries, Public Water Supplies, and MBMG well log locations (**Figure 3**). More well information can be displayed by clicking on any of the report options (blue text) located near the lower center of the map screen (**Figure 3**). To select another layer to display, simply click on the "New Data" button, in the upper left of the screen.

You can also move around on the map by using the "pan and zoom" buttons above the map frame. To use these features you must first click on the button and then on the map. You can also display data records for any point or feature on the map by using the "Identify" feature. Like pan and zoom, you click the "Identify" button, located immediately to the right of each data layer in the legend, and then click on the feature of interest on the map.

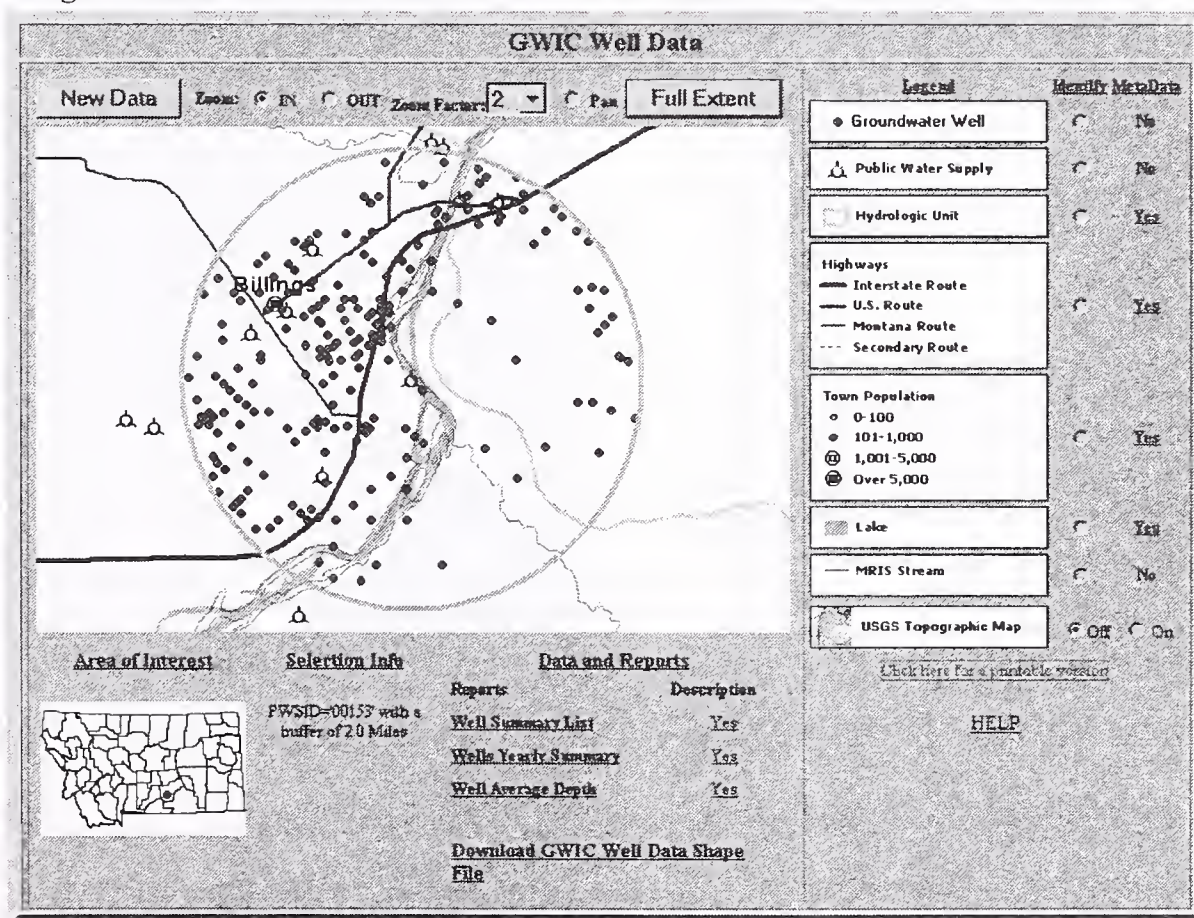
There are a lot of features built into the MQS and other web-based tools that make them valuable tools for

addressing a variety of questions and issues. The URL or web address for the MQS is <http://nriss.state.mt.us/wis/swap/swapquery.asp>. Give the MQS and other web-based tools a test drive. You will find they can make time spent on the web more productive. If you have questions on how to use the MQS, contact the SWP Program at (406) 444-6697

## Summary and Acknowledgements

The MQS, and other web-based applications, take advantage of the web to streamline access to decentralized sources of information and improve public access to public data. It is important to acknowledge that the effort to develop and test this type of web-based application was spearheaded by the NRIS program at the State Library. It is equally important to understand that cooperative efforts between multiple state and federal agencies and NRIS have made it possible to refine the tools and greatly improve access to the two dozen databases listed in Figure 2. Future cooperative efforts will add new data sources to the list, improve accuracy of geographic location data, and expand the number of hyperlinks to external sources.

Figure 3





# DEQ Implements Approval Process for New Public Water Supply Systems

The Public Water Supply Law, 75-6-112(3) MCA, prohibits construction and operation of a public water system, or modifications of an existing system, until the Department of Environmental Quality (DEQ) reviews and approves plans and specifications. Although this requirement is quite clear in the law, there is still confusion regarding the construction of test wells.

## Test Wells

Test wells are drilled *only* for the purpose of evaluating the quality or quantity of a proposed groundwater source, and/or for monitoring drawdown during test pumping of a production well. Test wells are usually smaller in diameter than production wells and are normally plugged and abandoned after construction of the production well. Test wells that will never be used as production wells may be drilled at any time without DEQ approval, but construction must comply with the Department of Natural Resources and Conservation (DNRC) well construction regulations.

If the owner or design engineer anticipates that a test well might also be used as a production well, *then the owner must receive prior department approval* of the well location, the engineering plans, and specifications. In this scenario, the department would typically approve only the construction and testing of the well. The well could be used as a public water supply source after all proposed improvements are approved, and after satisfactory test results and as-built certification are provided to DEQ.

## New Public Water Supply Sources

New public water supply sources must be reviewed and approved by the DEQ prior to construction and operation per Public Water Supply Law, 75-6-112(3) MCA. The Public Water Supply Section (PWSS) is charged with obtaining compliance. A two step approval process *may* be necessary *if* adequate water quantity and quality information is not available until the source has been developed and tested.

When existing quality and quantity information is not already available, the first step involves review of the proposed source location and construction methods. Department Circulars DEQ-1 and DEQ-3 contain requirements for submitting applications for new sources for Community and Non-Community systems, respectively. DEQ Circular PWS-6 identifies the information that must be provided in justifying a location for a new public source.

# Technical Assistance Available for PWSs

By Terry Campbell, DEQ Contract Manager

Would you like to establish better operations and maintenance (O&M) plans, seek the advice of experienced operators in making treatment decisions, or do you need some hands-on assistance with distribution system components, equipment calibration or chemical batching? Help is available and, best of all, it doesn't cost your system anything but time!

The DEQ Planning Division funds a contract to provide assistance for small public water supply systems, paid for with State Revolving Fund money through the "set-aside" provision for small systems. The O&M assistance program is available for every small public water system in the state especially when new operational staff are taking over system operation or management. The mission of the program is to help systems help themselves using this free service.

The contract was awarded to Midwest Assistance Program of Montana in 1999. They can help determine who would be best suited to help your system based on location and skills. Technical assistance providers matched to your system are experienced operators with unique skills and qualifications. Many of the systems that used this service requested return visits because of the quality of assistance provided.

The TA visit can be general, encompass the entire system, or zero in on questions of the owners or operators. The TA operator provides and explains solid how-to advice, forms, booklets, and other materials. A short note, phone call or e-mail message is all it takes to initiate the process. A TA provider will call to coordinate a visit to your system, at your convenience. You can't lose on this one! Give them a call, you won't regret it!

Should you wish to discuss this program, please contact one of these individuals:

Bill Leonard

MAP Montana Office

PO Box 1456

Whitefish, MT 59937

Phone: (406) 863-4900, e-mail:

bleonard@cyberport.net

Tim Miller (406) 390-0808, e-mail:

tjmmmap@mcn.net

Paul Torok (406) 677-2204, e-mail:

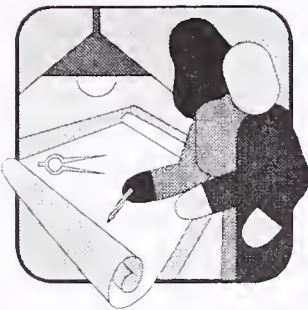
6772103@blackfoot.net

Jeff McCleary (406) 273-3336, e-mail:

jmh2o@uswest.net

**Approval - continued on page 7**





A professional engineer registered in Montana must submit design reports, plans and specifications for community systems. A hydrogeological analysis, an assessment of potential contamination sources and a vulnerability assessment must be submitted to address the

requirements of Circular PWS-6. A professional engineer or a qualified hydrogeologist may prepare these assessments. Evidence that the owner controls or owns a 100' contaminant-free zone around the well must also be submitted.

Applications for noncommunity sources may take on a more abbreviated format. Plans and specifications may be in a standardized format with a commitment by the applicant to ensure adherence to state design standards. However, the Department may also require that an engineer design a noncommunity public water supply if the proposed water system is complex enough to warrant this requirement. Information submitted to address the requirements of Circular PWS-6 will normally include a brief system description, an assessment of potential contaminant sources, a location map, an inventory map showing potential contamination within a one mile radius, and the estimated ground water flow direction. Evidence that the owner controls or owns a 100' contaminant-free zone around the well must also be submitted.

#### Steps in the Application Process

As indicated above, if adequate existing information is not available, the department may initially approve only the construction of a well as the first step in the approval process. The intent of the first step is to collect the necessary water quantity and quality information prior to approval of any other improvements. After adequate quality and quantity information is submitted, along with satisfactory plans and specifications for the rest of the system, the department would approve the entire water system as the second step of the process. The approval granted in the second step must be obtained by the applicant prior to construction of the remaining portions of a new system or connection of the source to an existing system. Information required for the second step includes:

#### Quantity

##### (a) Wells

Test pump data

Production pump selection and performance curve.

##### (b) Sources other than wells

Yield and method of measurement

(c) Evidence of application for water rights *may* be required

#### Quality

##### (a) Community and Non-Transient Non-Community systems.

Nitrate

Nitrite

Specific conductance

Coliform bacteria (two tests minimum)

pH, temperature, alkalinity, conductivity, turbidity, calcium, iron, manganese, hardness, sodium, sulfate, chloride\*

Inorganic chemicals\*

Volatile organic chemicals\*

Synthetic organic chemicals\*

Unregulated chemicals\*

##### (b) Transient Non-Community systems.

Nitrate

Nitrite

Specific conductance

Coliform bacteria (two tests minimum)

If adequate existing information regarding water quantity and quality is available prior to approval, the department may combine steps 1 and 2, and approve construction of the source(s) and all other associated improvements at the same time.

\* May be required by the department prior to final approval. If not required in advance of approval, these tests must be performed no later than the end of the calendar quarter in which the new source(s) is put into service.

All necessary approvals must be obtained from the Public Water Supply (PWS) Section. Questions may be directed to Jim Melstad or Michael Getty in the PWS Section at 444-4400. Source water protection staff (444-6697) can provide technical assistance with PWS-6 but are not authorized to approve.

DEQ Circulars can be viewed and downloaded from the Internet at <http://www.deq.state.mt.us/wqinfo/4-3.htm>

Information about potential contaminant sources can be found and mapped at <http://nr.is.state.mt.us/wis/swap/swapquery.asp>

Instructions for completing a PWS-6 report for new non-transient wells can be viewed and downloaded from the Internet at <http://www.deq.state.mt.us/wqinfo/5-6-3-5.htm>

This sheet is for guidance only. Additional requirements may apply. Contact the PWS Section at 444-4400 for more information.



# STATE REVOLVING FUND NEWS

The Department of Environmental Quality State Revolving Fund (SRF) programs, in conjunction with the Department of Natural Resources and Conservation (DNRC), provide assistance in planning, financing and reviewing water, wastewater and nonpoint source (NPS) projects to serve Montana citizens. The following are brief overviews of the two SRF programs and current projects that will help provide safe drinking water and protect public health and the environment. They total about \$44 million in loans for construction and improvement projects that will continue to help protect public health and the environment in Montana communities.

## Water State Revolving Fund Loan (DWSRF) Program

Project/Owner Name	Type of Project
Whitefish	Engineering
Lakeside	Dist./Storage
Laurel	WTP Upgrade
Havre	Engineering
East Helena	Engineering
Twin Bridges	StorageTank/Distribut.
Missoula County	Well/Dist./Storage
Sunset West	
East Helena	Distribution
Virginia City	StorageTank/Distribut
Whitefish	WTP Upgrade
Seeley Lake	New WTP
Plentywood	Treatment (Fe/Mn)
Philipsburg	Engineering. Well
Brockton	Dist./Storage

Providing safe drinking water is an important goal of the Montana Drinking Water State Revolving Fund program. To date approximately \$42.5 million has been committed to fund a variety of projects ranging from distribution system improvements to new surface water treatment plants.

Affordable financing for many public water systems, particularly small water systems, is difficult to secure. Congress recognized this fact and established the DWSRF as part of the reauthorization of the Safe Drinking Water Act in 1996. As a result, EPA provides grants to the states. In turn, states must provide 20 percent funding to match the federal grant. Loan terms are typically 4% for 20 years. However, interim financing is also available at a lower interest rate and shorter term. DWSRF also funds a number of set-asides that help achieve the goal of providing safe drinking water.

The following projects have been financed or may be financed in whole or in part with DWSRF loans.

Glendive	WTP Upgrade
Cut Bank	Engineering
Elk Meadows Ranchettes	Engineering/Storage
Broadview	Refinance-Well/Dist.
Columbia Falls	Refinance-Well/Storage
Boulder	Engineering/Dist.
Havre	WTP Upgrade
Ennis	Dist./Storage
Missoula County Fair	Backflow prevent./Dist.
Great Falls	Dist./Eng. Studies
Cut Bank	WTP Upgrade
Fort Peck Co. W&S Dist	WTP Upgrade/Dist.
Conrad	WTP Upgrade
Highwood W&S Dist	Well, Dist./ Storage
Helena	StorageTank

## Water Pollution Control State Revolving Fund (WPCSRF) Program

The Montana WPCSRF program goals are to safeguard the health of Montana citizens through protection of our valuable water resources and preservation of Montana's pristine environment. More than \$68 million in low-interest loans have already been utilized by communities, districts and agencies for collection systems, treatment facilities and NPS projects in Montana since this loan program began in 1992.

The following projects have been financed or may be financed in whole or in part with WPCSRF loans.

### Project/Owner Name Type of Project

Augusta	Treatment Plant
Belgrade	Treatment Plant Upgrade
Big Sky. Phase III	Treatment Plant
Big Timber	Treatment Plant Upgrade
Choteau	Collection System Upgrade
Columbia Falls	Solids Handling Upgrade
Conrad	Collection & Treatment
Corvallis	Treatment Plant Upgrade
DNRC NPS	Best Management Plan Projects
Drummond	Collection System Upgrade

East Helena	Treatment Plant Upgrade
East Missoula	Collection System
Forsyth	Collection System Upgrade
Geraldine	Treatment Plant Upgrade
Great Falls	Solids Handling Upgrade
Harrison W & S	Collection & Treatment
Helena	Treatment Plant Upgrade
Manhattan	Collection & Treatment Upgrade
Missoula - Pineview SID	Collection System
Missoula - Reserve St SID	Collection System
Red Lodge	Treatment Plant Upgrade

For further assistance or information about the WPCSRF program, contact Todd Teegarden, WPCSRF program manager at 406-444-5324. For more information about either of these programs or projects please contact: **DEQ at (406) 444-6697 or DNRC at (406) 444-6668; or, visit either Department on the internet at: [www.deq.state.mt.us](http://www.deq.state.mt.us) or [www.dnrc.state.mt.us](http://www.dnrc.state.mt.us)**



# Water Systems Must Report CCRs Yearly

The Department of Environmental Quality (DEQ) has been through two compliance periods for the Consumer Confidence Report (CCR) Rule. Many Community Water Systems (CWSs) did develop reports in 2000. Of the 613 CWS's that were required to do a CCR only 14 did not send a report to the state and were referred to EPA for enforcement. Now that the State of Montana has adopted the Consumer Confidence Report Rule, it is seeking primacy for the rule from USEPA.

By **April 1<sup>st</sup>** all CWS's that sell water to other CWS's need to send the sampling information that had been done for the compliance period to them. By **July 1<sup>st</sup>** all Consumer Confidence Reports must be received by DEQ's Public Water Supply Section. This past year hundreds of systems were in violation because they did not get their reports in by the due date.

**Start working on your CCR's early this year and get them in before July 1<sup>st</sup>.**

## **Common Problems with the CCR reports:**

1. On the Documentation Form, you must explain how your customers were notified that the report was available. If you just sign the bottom, DEQ doesn't know if your water system complied with the law or not.
2. Follow the guidelines below when trying to decide which detected contaminants in your water system should be listed in the CCR report:
  - a. Total coliform positive samples are detects. Include the highest number of positive samples collected in any one month. If your system was on a Health Advisory of Boil Water Order during the year, you must include the health effects language and course of action taken to remedy the problem.
  - b. For Lead and Copper list the 90<sup>th</sup> percentile of the most recent round of sampling and the number of sites exceeding the Action Level.
  - c. Convert MCL and MCLG values to a number equal to or greater than 1 when needed and then convert the detected value by the same factor. There are some good tables to help with this in EPA's Guidance Manual and in the templates.
  - d. For all contaminants check your records for the last sampling date. If you had a detect the last time you sampled for any contaminant, it must be listed in the report. Inorganic detects have been problematic in past reports because many systems have waivers for part or all of them and didn't look back to the last sample date.
  - e. If you are unsure about which contaminants need to be listed in the report, CALL Greg Butts at DEQ at 755-8985.
3. The CCR rule requires that detected contaminants must be listed in a table(s); and the table must include the following:
  - a. The MCL for the contaminant expressed as a number equal to or greater than 1.
  - b. The MCLG for the contaminant expressed in the same units as the MCL.
  - c. If the contaminant has an Action Level or Treatment Technique level, these must be listed instead of the MCL.
  - d. The date of the sample for the detected contaminant.
  - e. The highest level detected and the range of detects if more than one sample was taken.
  - f. The likely source(s) of detected contaminants.
  - g. If a detect is a violation of the MCL or treatment technique, the Health Effects language for that contaminant must be listed and an explanation of how the water system is addressing the problem must be included.
  - h. Detects for unregulated contaminants (for example, sulfate or state required inorganics for new sources) that your system is required to sample be must listed on the report, but in a separate table from the regulated contaminants.

## **Example table:**

<b>TEST RESULTS</b>								
Contaminant	Violation Y/N	Sample Date	Highest Level Detected	Range Detected	Unit Measurement	MCLG	MCL	Likely Source of Contamination
7. Antimony					ppb	6	6	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder
8. Arsenic					ppb	n/a	50	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes

4. Some laboratories, contractors and technical assistance groups prepare CCR's for water systems. Remember that all water systems are responsible for making sure that the finished report meets the compliance criteria for the rule and that it is published, distributed or noticed to all consumers according to the rule. The water system must also send a copy of the report to the local county health department and a copy along with the Documentation Form to the Public Water Supply Section. Please call Greg Butts at DEQ, Kalispell, (755-8985) or Eric Minneti at DEQ, Helena, (444-4769) if you have any questions about *this complicated rule*.



# Developing Department Circular PWS-6 Review

Department Circular PWS-6 describes the requirements for gathering and preparing information necessary for DEQ review of new drinking water sources. An adequate review ensures that a proposed drinking water source has the potential to deliver high quality drinking water and must describe the proposed water source in relation to other physical and cultural features in the area.

For the past 20 years, DEQ has required source water protection design standards for all new proposed public water sources. These requirements were originally found in the language of "*DHES Circular WQB-1 Standards for Water Works*" and its predecessor known as the "Ten State Standards", dating back to 1982. To meet the requirements of those design standards, the design report had to include information that described aquifer characteristics and identified potential sources of contamination. The design standards are now described in Circular DEQ-1. The introduction to the section concerning water sources is excerpted below:

**"In selecting the source of water to be developed, the designing engineer, must prove to the satisfaction of the reviewing authority, that an adequate quantity of water will be available, and that the water that is to be delivered to the consumers will meet the current requirements of the reviewing authority with respect to microbiological, physical, chemical and radiological qualities. Each water supply should take its raw water from the best available source which is economically**

**reasonable and technically possible."** (*Department Circular DEQ 1 Standards for Water Works. MT DEQ 1998*)

Engineering staff in the Public Water Supply Section (PWSS) wrote the Department Circular PWS-6 to add definition and consistency to the review process for both DEQ and the source developer; it does not create additional requirements.

Review authority for a new drinking water source rests with the PWSS. However, Source Water Protection Section professional staff provides review comments to the PWSS on PWS-6 reports. Comments are based on: 1) a completed review that compares the submittal against a review checklist, and, 2) a screen for potential contaminant sources that the proposed water source may be highly susceptible to. Written comments from the Source Water Protection Section staff are forwarded to the PWSS reviewer. The PWSS retains the responsibility for addressing the adequacy of a proposed source.

The Source Water Protection Section staff are available to answer questions concerning the report format, technical requirements, and how to locate information sources. They can be reached at (406) 444-6697. Also, Department Circular PWS-6 and Instructions for completing a PWS-6 report can be viewed and downloaded from the Internet at <http://www.deq.state.mt.us/wqinfo/5-6-3-5.htm>. Information about potential contaminant sources can be found at <http://nris.state.mt.us/wis/swap/swapquery.asp>

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## Operating Permits Needed for UST Facilities Early in 2002

After March 31, 2002, it will be illegal for fuel to be placed in or dispensed from an underground storage tank (UST) system unless the owner or operator of that system has obtained an operating permit from the Department of Environmental Quality. This operating permit will indicate that the UST system complies with state and federal UST system rules and regulations.

Before DEQ issues an operating permit, the owner or operator must hire a licensed private compliance inspector to inspect each UST system at the facility. The inspection must include examination, assessment, and documentation of release detection equipment, spill and overfill prevention devices, corrosion protection equipment, and verification of required testing, monitoring and record keeping.

DEQ has trained and tested thirty compliance inspectors. A list of licensed inspectors is available on DEQ's web page at <http://www.deq.state.mt.us/rem/tsb/ess/enfLicensedComp>

[lianaceInspectors.PDF](#) , They also have been sent to all owners and operators. Compliance owners or operators will not be assigned times for inspections; the initial inspection must be done by January 1, 2002. Subsequent inspections must be completed at least 90 days before the expiration date of the operating permit. Operating permits must be renewed every three years.

All new facilities installed after January 1, 2002 will get conditional permits valid for 90 days once the DEQ receives all installation documentation. These facilities must have an initial inspection within 60 days from the date of the conditional permit.

Any facility lacking a compliance inspection by January 2002 will not receive an operating permit and, after March 31, 2002, cannot legally receive any petroleum product. This applies to all currently regulated facilities including aboveground storage tanks with underground piping.

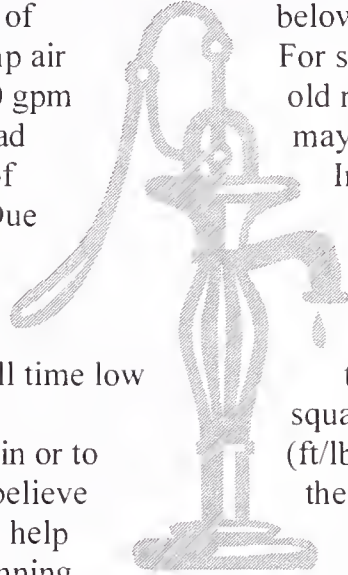


# Draw Down Testing Could Save Your Well Pumps!

By Rick Cottingham, Water Quality Specialist

As Montana goes into another hot and dry summer, public water systems across the state are showing signs of stress. Many people don't believe there is a water crisis at hand! We recently visited a city where pumps from both of the city wells were surging; that is, alternating between a pumping rate of zero and 600 gpm on a cycle of about 10 seconds. That's right, they would pump air for five seconds (zero flow) and then pump 600 gpm for five seconds. What odds would you give (had this not been detected) for the life expectancy of these pumps? What was causing the surging? Due to unusually high water usage from both inside and outside the city, from both city wells and several large irrigation wells, the water table serving these wells was being drawn down to all time low levels, thus causing the surging.

We don't yet have the means to make it rain or to prevent farmers from irrigating, which I don't believe any of us want to do anyway. However, we can help protect valuable city pumping equipment by running periodic pump draw down tests on community wells. DEQ staff has explained this in operator training for many years, and continue to emphasize this strategy to the new "operators in training". Performing this draw down test allows operators to track local water table levels to see if they are dropping close to the recorded pump setting. If necessary, a pump installer can lower the pump. Of course, there might be situations where the pump setting can't be changed. Should that arise, a voluntary water conservation plea should be issued to the consumers in order to provide enough water for domestic use and maintain water for fire protection.

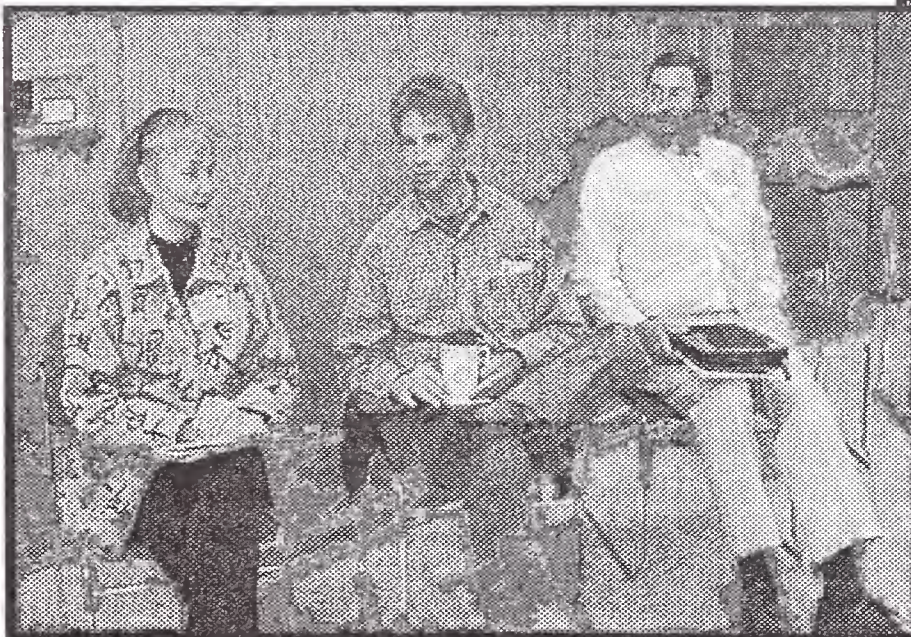


The draw down test procedures are as follows: To run a draw down test on your wells, look for a pipe coming out of the well casing that has a pressure gauge and an air valve attached. This pipe is attached to a tube, which should extend to a point either five feet above or below the pump. You must know how long this tube is. For some of you, this may require a lot of digging through old records. For a few of you, unfortunately, this line may have been cut off when the pump was repaired last.

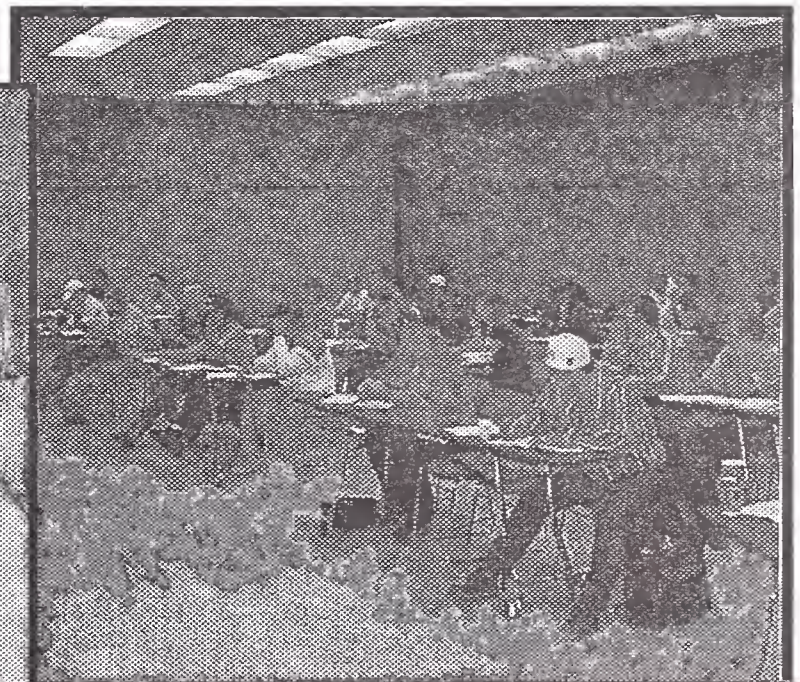
In this case the line will have to be replaced. The next step is to use a tire pump or an air tank and to put air into the tube until the pressure stabilizes. Now, you need a gauge that reads in feet of water; subtract the gauge reading from the total length of the tube. If the gauge is calibrated in pounds per square inch (psi), then multiply the reading by 2.31 (ft/lb) and subtract this number from the total length of the tube. The end result is the distance from the top of the ground to the top of the water. You may notice that the gauge pressure may drop as the pump is operated. This indicates the normal drawdown associated with pump operation; the pressure should stabilize in a short time.

In order to determine how your water supply is holding out, this test should be done frequently during the hot, dry weather and more often as your water level drops in relationship to the pump. If you notice a declining water level trend, contact the Public Water Supply Section at 406-444-4400 in Helena, 406-247-4445 in Billings, or 406-755-8985 in Kalispell for assistance, in addition to taking other water conservation measures. (Partial Reference: *Water and Wastewater Digest* 1988)

## 2000 Fall Water School Photos



Shirley Quick (DEQ), Jay Sinott (EPA), and Jon Dillard (DEQ) visit during the 2000 Fall Water School.



A class listens during instruction at 2000 Fall Water School.



# NEW FACES IN THE PUBLIC WATER SUPPLY SECTION

By Jim Melstad

We have had a lot of staff turnover in the PWS Section in the past year with eight staff leaving for greener pastures. Below is a current summary of our staff and their responsibilities. If you have questions, please call or write to DEQ Community Services Bureau, Box 200901, Helena, MT 59620-0901.

## **PUBLIC WATER SUPPLY SECTION:**

**Jim Melstad** – Section supervisor; phone 444-5315.

**Sandi Ewing** – Total coliform rule manager, and coordination of office support; 444-5314.

**Eugene Pizzini**– Coordination of compliance and enforcement actions; 444-3425.

**Vacant** – Section administrative support

## **ENGINEERING SERVICES PROGRAM**

Engineering Services Program staff performs plan and specifications review of proposed improvements to public water and wastewater systems; inspects public systems, administers contracts for plan review and water supply inspection services. The program is responsible for the implementation of Phase II & V, lead and copper, and the radionuclide rules.

**Michael Getty** – Program manager; 444-5311.

**Ryan Leland** – Phase 2 and Phase 5 rules; 444-5881.

**Melissa Levens** –Database & reporting; 444-3744.

**Sam Martinez** – Lead and copper rule, engineering plan review; 444-5313.

**Jennifer O'Mara** – Radon and radionuclide rules, engineering plan review; 444-5318.

**Vacant** – Support for plan review, fees and PWS inventory maintenance; 444-2429.

## **FIELD SERVICES PROGRAM**

This program provides operator training and technical assistance to public water suppliers. The program is responsible for implementing the surface water treatment rule (SWTR), Disinfectants/ Disinfection Byproducts Rule (DBP), Consumer Confidence Reports (CCR) and Cross-Connection Control.

**John Camden** – Program manager; 444-4071,

**Mike Brayton** – Hydrogeology, groundwater under the influence of surface water; 444-4630.

**Rick Cottingham** – Surface water treatment rule; 444-4019

**Denver Fraser** – Disinfection by-products, engineering plan review; 444-5312.

**Eric Minneti** – Training coordination; consumer confidence reports (CCRs); 444-4769.

**Vacant** – administrative support and data entry.

## **OPERATOR CERTIFICATION**

This program certifies operators in eighteen classes of water distribution, water treatment, and wastewater treatment systems that serve the public. This office, sends and processes applications, mails study materials, schedules and gives exams twice yearly and issues certificates for fully certified and operator-in-training operators. This program also coordinates all activities of the Governor-appointed Water and Wastewater Operators Advisory Council and the Continuing Education Credit Review Committee (CECRC).

**Shirley Quick** – Program manager; 444-2691.

**Ashley Finnegan** – Administrative support, CEC processing, customer service; 444-4584.

**Reta Therriault** – Exam applications & study materials, customer service; 444-3434.

## **BILLINGS OFFICE**

Staff in the Billings office performs section responsibilities as described above in the eastern half of the state. The Billings office provides coverage for: Big Horn; Carbon; Carter; Custer; Daniels; Dawson; Fallon; Fergus (eastern one-half); Garfield; Golden Valley; Mcone; Musselshell; Park; Petroleum; Phillips; Powder River; Prairie; Richland; Roosevelt; Rosebud; Sheridan; Stillwater; Sweet Grass; Treasure; Valley; Wheatland; Wibaux; and Yellowstone counties.

**Jerry Burns** – Overall supervision and management; 247-4446

**Cookie Coats** – Administrative support; 247-4445

**Matt Usuriello** – Technical assistance; 247-4455

**Ryan Welsh** – Engineering plan review; 247-4447

## **KALISPELL OFFICE**

Staff in the Kalispell office performs section responsibilities as described above in the northwest corner of the state. The office provides coverage for Flathead, Lincoln, Lake, Mineral and Sanders counties.

**Greg Butts** – Office coordination; CCR, cross-connection control; 755-8985

**Marilyn Hartman** – Administrative Support; 755-8985

**Mike Kropp** – Technical assistance; 755-898

**Max Lauder** – Engineering plan review; 755-8985





## MONTANA PROGRAM APPROVED BY EPA!

The DEQ received approval of the Montana Operator Certification Program from the US EPA on December 8, 2000 in a letter from Stephen S. Tuber, Region 8 Water Program Director to DEQ Director Mark Simonich. The letter stated, in part: "I am pleased to inform you that the Environmental Protection Agency (EPA) has approved the Montana Operator Certification Program in conformance with Section 1419 of the Safe Drinking Water Act (SDWA), as amended. It is the EPA's determination that your program complies with all of the requirements of the Federal Operators' Certification guidelines."

The approval of the program passed without any major revisions to the existing operator certification program. The addition of the 1997 requirement that nontransient noncommunity public water supplies must have a certified operator was the only legislative change implemented. EPA suggested that we make some minor rule changes to require some type of experience requirement for Class 5AB operators and to clarify CEC requirements for military personnel, but none of these changes were required to meet this initial program approval.

To help us determine the best way to make these future rule changes, DEQ would like input from operators and system owners on the following issues:

**Class 5AB experience:** Montana does not require any experience for a Class 5AB operator (serving fewer than 100 people) to become a fully certified operator.

The EPA guidelines require that all operators "have the defined minimum amount of on-the-job experience for each appropriate level of certification. The amount of experience required increases with each classification level. Post high school education

by Shirley Quick, Certification Officer may be substituted for experience. Credit may be given for experience in a related field (e.g., wastewater). Experience that is used to meet the experience requirement for any class of certification may not be used to meet the education requirement."

One solution may be to require all Class 5AB operators to earn a defined number of months of experience before they become fully certified. EPA may also allow us to require Class 5AB operators to attend a specific type of training in lieu of experience.

Please help us out by answering the following questions. For a Class 5AB classified system operator or owner which would be preferable:

1. Having to earn experience to get fully certified? (For example, 3 months of on the job experience.)
2. Having to attend an approved class that would count towards that experience requirement? (For example, a 3-4 day basic training session?)
3. Some combination of both? (For example, working for 1 month and attending a 2 day training session?)

Please keep in mind that there **may** be money available from the EPA expense reimbursement grant to pay for training and certification costs for water systems serving under 3,300 people (see following article.)

**Military leave CEC waiver:** The Administrative Rules of Montana 17.40.213(11) state in part: "The continuing education credit requirement of this rule are waived for a certified operator during periods when: (a) The operator serves honorably on active duty in the military services."

Operators who are in the military may make a written request to waive their CEC renewal



requirements. The Water and Wastewater Operators' Advisory Council then determines whether the request should be granted. However, EPA acknowledged that the present rule does not specify any time limit on how long the waivers can be granted. For example, if an operator was on active duty for ten years, he may be able to receive a waiver during that entire time. If that operator paid his renewal fees, no further training would be required to keep his certification current.

To assist us, could you please let us know which of these situations you would prefer.

1. Setting a time limit on this type of waiver. (For example, should this only be allowed for one two-year CEC period during a term of duty?)
2. Allowing an operator on active duty for longer than the CEC period to make up his CECs when he returns. (For example, his requirement could be waived until the next CEC period, but he would have to earn CECs for both periods.)

Since DEQ will be beginning the rule drafting process within the next few months, your input will be very appreciated. Please send your written suggestions to Shirley Quick, DEQ, PO Box 200901, Helena MT 59620.

### ***PROPOSED OPERATOR EXPENSE REIMBURSEMENT MONEY***

The comment period ended September 5, 2000 on EPA's proposed method to allocate funding to states for operator certification expense reimbursement grants. Using the proposed method, Montana may qualify to get approximately \$1.6 million that can be used to reimburse operators of public water systems serving less than 3,300 people for operator fees and training costs.

This grant proposal is good news for the approximately 840 community and nontransient public water supply systems in Montana that serve fewer than 3,300 people. However, several steps must be completed before anyone will see this money. These steps include:

1. EPA must approve the state operator certification program. Written approval was

received via a letter from EPA dated December 8, 2000. We are one step closer with this!

2. EPA must approve the allocation method. EPA hopes to have this done by the end of December 2001.
3. EPA must clarify the grant process and begin receiving grant requests. It is anyone's guess as to when this will be done.
4. The Montana legislature must approve the spending authority for the operator certification program to spend the grant money. The department is requesting the approval at the 2001 legislative session. The decision on this should be made by the end of the session in April 2001.
5. The Montana operator certification program must submit a grant request after the legislature approves it and EPA starts receiving requests.
6. EPA must approve the grant request.
7. Montana must develop the funding request and reimbursement process. The department, Water and Wastewater Operators' Advisory Council, and other stakeholders will jointly determine the process to reimburse this money based on EPA's requirements.

In other words, don't start spending this money yet. The Montana certification office will continue working on this grant proposal to ensure that Montana's operators get their share of this reimbursement grant money.

As always, if you have any questions about this or any operator certification issues, please call Shirley Quick at 406-444-2691.



**Think Spring!**



## Shirley Quick receives national award



**Shirley Quick**, The Montana Department of Environmental Water and Wastewater Operator Certification Program manager, recently received the 2001 Robert C. McAnespie Certification Officer Award during the Association of Boards of Certification national convention last week in Charleston, South Carolina. The award is

given to recognize the recipient for their outstanding contribution towards establishing or advancing certification.

"We are proud of Shirley's receipt of this award," DEQ Director Jan Sensibaugh said. "Shirley has

worked tirelessly to develop Montana's Operator Certification Program into one of the best in the nation and has been instrumental in setting standards for programs in other states"

The Robert C. McAnespie Certification Award is presented to a certification officer of a member certifying authority in recognition of outstanding contribution towards establishing or advancing certification during the previous year. The certification officer must contribute through time and effort; innovative and successful approaches; leadership; development of materials; or a combination of any of these. The contributions must be of state/provincial, regional, or international scope, and of lasting value in improved performance by more highly qualified personnel and laboratory facilities. The nominee must be the certification officer of a regular member of the association.

Kim Dyches, Quick's counterpart in Utah for the 2001 award, nominated Shirley for the award.

## Fox joins METC



**Michelle Fox** has joined the METC team as the new Training and Development Specialist. She graduated from Dartmouth College in Hanover, New Hampshire with two Bachelor of Arts Degrees, one in Geography modified by Environmental Science and one in Native

American Studies.

Michelle has a technical background in Geographical Information Systems (GIS) and Database Development with application to groundwater, surface water, and land use problems. Prior to coming to METC, Michelle worked as the GIS Coordinator for the Fort Belknap Indian Community, coordinating GIS activities between Fort Belknap College and the Fort Belknap Environmental Protection Program.

In her spare time, Michelle enjoys flower crafts and projects, as well as graphic design and website development.

## Jan Sensibaugh Named New DEQ Director



In January 2001 Montana Governor Judy Martz appointed new department directors, including **Jan Sensibaugh** as the Director of Department of Environmental Quality.

Jan replaces Mark Simonich who became the Director of the Department of Commerce. Jan served most recently as the Administrator of the Permitting and Compliance Division at DEQ and has worked for the State of Montana for 23 years.



## CALENDAR OF EVENTS

### MRWS CONFERENCE\*

GREAT FALLS

TRAINING: 02/21-23/01

EXAM: 02/23/01, REGISTRATION DEADLINE: 02/08/01

TIME: AFTERNOON

### MRWS ANNUAL OPERATOR CERTIFICATION & MATH REVIEW

KALISPELL

TRAINING: 03/21-23/01

EXAM: 03/24/01, REGISTRATION DEADLINE: 03/09/01

TIME: 8:30 A.M. – 12:30 P.M.

### METC/DEQ SPRING WATER SCHOOL

BILLINGS

TRAINING: 03/21-23/01

EXAM 03/24/00, REGISTRATION DEADLINE: 03/09/01

TIME: 8:30 A.M. – 12:30 P.M.

### DEQ SPRING MATH REVIEW & EXAMINATIONS

BILLINGS, GREAT FALLS, HAVRE, HELENA, KALISPELL, MILES CITY, MISSOULA

MATH REVIEW: 03/23/01

EXAM: 03/24/01, REGISTRATION DEADLINE: 03/09/01

TIME: 8:30 A.M. – 12:30 P.M.

### MSAWWA/MWEA JOINT CONFERENCE

BUTTE, RAMADA COPPER KING INN

PRECONFERENCE, 4/18/01

CONFERENCE: 04/19 - 20/01

### MT ASSOCIATION OF WATER & SEWER SYSTEMS ANNUAL CONFERENCE (MAWSS)\*

MISSOULA

TRAINING: 04/20-21/01

EXAM: 04/21/01, REGISTRATION DEADLINE: 04/06/01

TIME: BY APPOINTMENT ONLY

### METC SUMMER SCHOOL\*

KALISPELL

TRAINING: 07/17-18/01

EXAM: 07/19/01, REGISTRATION DEADLINE: 07/04/01

TIME: 9:00 A.M. – 1:00 P.M.

### METC/DEQ/MSU 68<sup>TH</sup> ANNUAL FALL WATER SCHOOL

MSU-STRAND UNION BUILDING, BOZEMAN

TRAINING: 09/17-20/01

EXAM: 09/21/01, REGISTRATION DEADLINE: 09/06/01

TIME: 8:30 A.M. – 12:30 P.M.

\* ONLY 4 & 5 WATER AND 3 & 4 WASTEWATER EXAMS GIVEN

### DID YOU KNOW?

One ear of corn is 80% water; 75% of the human brain is water; it takes 39,090 gallons of water to manufacture a new car & its four tires and 75% of a living tree is water!

## TEST YOUR KNOWLEDGE PUZZLE!

All of the answers to the questions below can be found up & down, across, backwards or vertically

(circle the words)

by Reta Therriault

C A M X O Y C O A L P O D Y D  
W H I E J I H R I B A I R E U  
P O L M X L W S O A L K A L I  
Z O W O P I K O U C H N W H T  
U B T U R B I D I T Y R D S S  
P L A A S I L A Y E R E O A A  
W O R K B A N G E R S V W I N  
E V I E I L J A Y I E O N D R  
L E N W T I E B T A L R J E E  
L J O K A A U R O O P A F Z G  
L U R E T A W W A R R I B A D  
O R G A N I C T S P U T A P U  
G Y A M O X F Z F Q S Q U A L  
L O N I A E G L A O P U T X S  
S H I R L E Y J O K S E K O H  
U S C E S C H O I C R Y I P P

A record of soil & rock formations encountered in the sinking of a well

Water that is considered satisfactory for drinking

Certain soluble salts that combine with acids to form neutral salts

DEQ Certification Clerk – who do you call when you want to know how many CEC's you have

The cloudy appearance of water caused by the presence of suspended & colloidal matter

Substances from animal & plant sources that contain carbon

The settleable solids separated from water during processing

Single-celled organisms which use organic matter for food & produce waste products

Clumps of bacteria & particulate impurities that have come together & formed a cluster

DEQ Certification Officer

The amount of water used from a tank or reservoir

Water having a low concentration of calcium & magnesium ions

Natural underground layer of porous materials usually capable of yielding a supply of water

The metering device that is used to add chlorine to water

Natural of water state prior to treatment

A substance that is poisonous to an organism

Microscopic plants that contain chlorophyll & live in water

The intensity of the basic or acid condition of a liquid

DEQ Certification Tech – Who do you call when you want to take an examination

Material such as sand, salt, iron, calcium salts & other mineral materials

**The first person to complete the puzzle correctly & send it back to the DEQ office will win a prize!**



# MATH REVIEW FOR CERTIFICATION EXAM

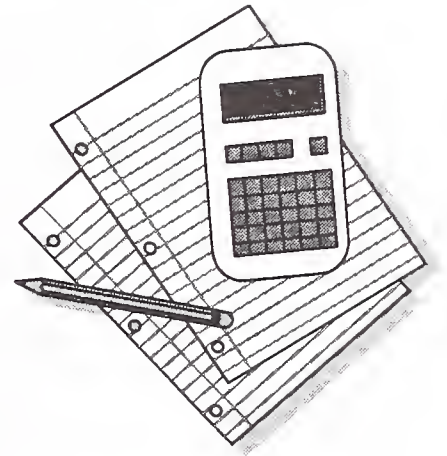
Sponsored By **Water & Wastewater Operator Certification Program**

Friday March 23, 2001

6:00 p.m. – 9:30 p.m.



**GREAT FALLS**  
College of Technology  
2100 16<sup>th</sup> Avenue South  
Heritage Hall  
Room G45-46



**HAVRE**  
MSU – Northern  
300 11<sup>th</sup> Street West  
Hagener Science Center  
Room 113

**HELENA**  
Cogswell Building  
1400 Broadway  
Room C209A  
(use South entrance)

**MILES CITY**  
Miles Community College  
2715 Dickinson  
Room 106  
(main building)

**MISSOULA**  
Mountain Water Co.  
1345 Broadway  
Conference room

**BILLINGS \***  
Billings Hotel & Convention Center  
1223 Mullaney Lane  
room # will be posted in the hotel lobby  
1:30 p.m. to 4:30 p.m.

**KALISPELL**  
Kalispell Wastewater Treatment Plant  
2001 Airport Rd, Gate #4  
Conference room  
6:00 p.m. to Finish

These sessions are intended to review basic math for people with valid applications for the exam on Saturday, March 24, 2001. The water school is not designed to teach you all you need to know to pass the exam OR to be a competent operator. You must invest self-study time before attending the school.

Since these sessions are designed for entry level operators, no CEC's will be given for the Friday evening sessions or the sessions available through MRWS and the Billings water school.

\*BILLINGS – At the water school in Billings from March 21<sup>st</sup> through March 23<sup>rd</sup>, 2001 sessions will be available each day to answer questions on the self study guides, and to give an overview of information. Contact the Montana Environmental

Training Center at 406/771-4433 or the certification office at 406/444-3434 for more information on the spring water school.

\*\*KALISPELL – The sessions in Kalispell from March 21<sup>st</sup> through March 23<sup>rd</sup> will be taught and sponsored by Montana Rural Water Systems. For more information, contact their office at 406/454-1151.

The Department of Environmental Quality (DEQ) will make reasonable accommodations for people with disabilities who wish to participate in the training. If you require accommodations, write to the Department (PO Box 200901, Helena, Montana, 59620-0901) no later than 15 days before the training to advise us of your accommodation needs.

For more information, call Reta Therriault  
DEQ Water/Wastewater Operator Certification Office  
406/444-3434



# PERMITTING & COMPLIANCE DIVISION

CERTIFICATION EXAMINATION NOTICE  
**SATURDAY -- MARCH 24, 2001: Registration 8:00 a.m.**  
**Examination 8:30 a.m. – 12:30 p.m.**

<b>BILLINGS</b>	Billings Hotel & Convention Center, 1223 Muldowney Lane, room number will be posted in the Convention Center lobby.
<b>GREAT FALLS</b>	College of Technology; 2100 16 <sup>th</sup> Ave South; room G45-46
<b>HAVRE</b>	MSU-Northern; 300 11 <sup>th</sup> Street West; Hagener Science Center; room 113
<b>HELENA</b>	Cogswell Building; 1400 Broadway; room C209 (use south entrance)
<b>KALISPELL</b>	Kalispell Wastewater Treatment Plant; 2001 Airport Rd, Gate #4; conference room
<b>MILES CITY</b>	Miles Community College; 2715 Dickinson; room 106 (main building)
<b>MISSOULA</b>	Mountain Water Co.; 1345 Broadway; conference room

**NOTE, THERE WILL BE NO EXCEPTIONS TO THIS:**

By MARCH 9, 2001, as required by ARM 17.40.208, everyone taking examinations must have:

1. Completed an application for certification as a water or wastewater operator;
2. Paid application fees; and
3. Submitted examination registration slips and fees of \$70.00 per examination.  
(Combination examinations 2A3B, 3A4B, 4AB and 5AB require \$70.00 examination fee only.)

**FEES ARE:**

\$70 for water (including either or both water distribution or water treatment)  
\$70 for wastewater  
\$70 for each water exam & for each wastewater exam

To request application materials or to ask for additional information, call Reta Therriault at 444-3434 for Ashley Finnegan at 444-4584 or write to:

Department of Environmental Quality  
Water/Wastewater Operator Certification  
PO Box 200901 – Helena MT 59620-9001

PLEASE KEEP THE UPPER PORTION OF THIS NOTICE

✂.....

## EXAMINATION REGISTRATION SLIP

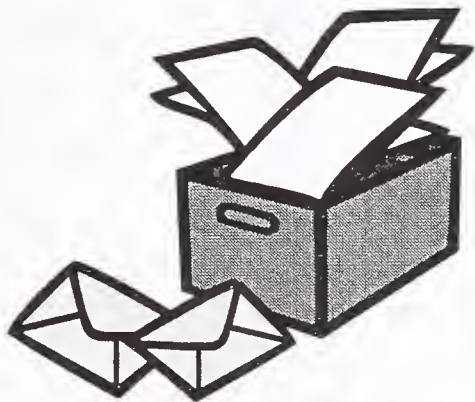
(To register for an exam, detach and return this slip with appropriate fees by March 9, 2001)

NAME: \_\_\_\_\_ OPERATOR # \_\_\_\_\_  
ADDRESS: \_\_\_\_\_  
CITY: \_\_\_\_\_ ZIP CODE: \_\_\_\_\_ TELEPHONE #: \_\_\_\_\_

The box marked below is where I will take the examination(s):

<input type="checkbox"/> Billings	<input type="checkbox"/> Great Falls	<input type="checkbox"/> Havre	<input type="checkbox"/> Helena	<input type="checkbox"/> Kalispell	<input type="checkbox"/> Miles City	<input type="checkbox"/> Missoula
		1	2	3	4	5
A - Water Distribution	_____	_____	_____	_____	_____	_____
B - Water Plant	_____	_____	_____	_____	_____	_____
C - Wastewater Plant	_____	_____	_____	_____	_____	_____





## CEC NAGGINGS

(THAT YOU MAYBE SHOULDN'T IGNORE)

All operators should have received a current Continuing Education Credit (CEC) status report in the mail by the end of December. This is for your information only.

Remember, your credits are due on June 30, 2002. Why not earn your credits early so you don't have to rush at the end? There are lots of fun and exciting ways to get your credits, including any approved courses. The METC January through December 2001 calendar lists courses from training providers. You can also complete an approved correspondence course listed on the METC calendar, or find your own class and apply to have it approved for credit. Internet and CD-Rom courses are also new ways to earn credits. Remember that operators-in-training are not required to earn CEC's.

If there are any problems on your CEC status or you need information on any of the training options, contact Ashley Finnegan, Water/Wastewater Operator Certification Office clerk at (406) 444-4584.

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## A BLAST FROM THE PAST WITH ... OPERATORS CORNER!!!

By Bill Bahr

Here's a short quiz to warm you up for the operator questions:

- 1) How many counties are there in Montana?
  - 2) Name the highest point in Montana.
  - 3) What river converges into the Missouri in Great Falls?
  - 4) Name the largest lake in Montana.
  - 5) Name the three rivers that converge at Three Forks.
  - 6) What major tributary of the Columbia River originates in Montana?
  - 7) On what river is Hungry Horse Dam located?
  - 8) Name the eastern most town in Montana.
  - 9) Name the extreme southern town in Montana.
  - 10) Name the lake that lays on the edge of the Town of Valier.
- While some of the above questions relate to water, water sources, watersheds or waterbodies, others are just for fun. The following questions relate to water treatment & distribution systems and wastewater treatment & collection systems.
- 1) The quantity of chlorine that is required to react with substances in the waste before disinfection can take place is called \_\_\_\_\_.
  - 2) If possible, pollution of a public water supply should be prevented at the \_\_\_\_\_, rather than to rely on removal of the pollution by water treatment processes.
  - 3) Calculate the pounds of solids entering a tank each day if the flow is 4 MGD and the concentration of solids is 200 ppm.
  - 4) A new 6-inch water main 500 feet long needs to be disinfected. An initial chlorine dose of 400 mg/L is expected to maintain a chlorine residual of over 300 mg/L during the three-hour disinfection period. How many gallons of 5 percent sodium hypochlorite solution will be needed?
  - 5) An operator plans to paint the inside and outside of a cylindrical tank that is 100 feet high and 20 feet in diameter. One gallon of paint will cover 300 square feet. How many gallons of paint will the operator need? (For fun, estimate how long this job will take. Prizes for the most creative answer.)

**...Corner (Continued on page 23)**





# 9th Annual Spring Water School

Billings, March 21-23, 2001

## WEDNESDAY, MARCH 21, 2001

TIME	BASIC TRAINING	WASTEWATER	SURFACE WATER	Ground Water
8:30 AM	<b>Welcome and Introduction - METC/DEQ</b> 8:45-9:15AM - Operator Certification 9:15-10:00AM - Public Health Partnership Issues			
10:15 AM	<b>Operator Certification Q &amp; A</b> (for all exams)	<b>Chlorine Disinfection</b>	<b>Joint Session</b>	
10:45AM	<b>Technical Terminology for all exams</b>			
12:00 PM	LUNCH (on your own)			
1:00PM	Formulas (all exams)	Waste Water Collection	Water Distribution O & M	
2:00PM	Volume & Area for all exams	System		
3:15PM	Hydraulics for all exams	3:30-5:00pm Billings Distribution/Collection Shop Tour		

## THURSDAY, MARCH 22, 2001

TIME	BASIC TRAINING	Wastewater	Surface Water	Ground Water
8:00AM	Distribution Systems	Wastewater Treatment Overview	Open Discussion: Surface Water Treatment Overview	Ground Water Disinfection Byproducts Rule
9:00AM	Loading Rates	Wastewater Sampling and Lab	Filter Membrane Pilot Study	Understanding Your Water Distribution System Map
10:15AM	Mechanical Wastewater System Review	Lagoon System Design & Troubleshooting	Sampling Instructions	Joint Water Session
11:15AM	(1C, 2C)		What Happens to Your Sample	
12:00PM	LUNCH			
1:00pm	Source Water Treatment	Watersheds	SCADA Systems	Wells and Drought
2:00pm	Concentrations & Dosages	Effluent Use & Disposal	<i>Alternate Disinfectants</i>	
3:15PM	Groundwater	Briarwood Plant Tour	Tour: Cedar Park WTP	Monitoring Wells
4:00PM	(all A & B exams)			Source Water Protection

## FRIDAY MARCH 23, 2001

TIME	BASIC TRAINING	Water	Wastewater
8:00AM	Coliforms, Sampling, & Public Notice <sup>(all A &amp; B exams)</sup>	Solution for Inspections, Cleaning, Repairs & CT Compliance Issues	Biosolids?? Or System Evaluations??
10:15AM	Management, Operation, and Record Keeping of Your Utility		
11:45AM	Wrap-up & Adjourn	METC	
1:00-4:00	Exam Preparation; No CECs will be given for this session		

## SATURDAY, MARCH 24, 2001

9:30-1:00	Examinations; room location will be announced during wrap-up		
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# Fall Examinations!

## Fall Water & Wastewater Exams

**Friday, September 21, 2001**

**MSU-Strand Union Building, Bozeman**

**Registration @ 8:00 a.m. Examination Period: 8:30 a.m. – 12:30 p.m.**

**NOTE, THERE WILL BE NO EXCEPTIONS TO THIS:**

By SEPTEMBER 06, 2001, as required by ARM 17.40.208, everyone taking exams must send in the following:

1. Completed application for certification as a water and/or wastewater operator;
2. Paid application fee of \$70.00 per water and/or \$70.00 per wastewater; and
3. Registration slip and fee of **\$70.00 per** examination.  
(Combination exams **2A3B, 3A4B, 4AB and 5AB require \$70.00 examination fee only.**)

To request application materials or ask for additional information, call Reta Therriault at 444-3434 or Ashley Finnegan at 444-4584 or write to:

**Department of Environmental Quality  
Water and Wastewater Operator Certification  
PO BOX 200901  
Helena MT 59620-0901**



## Fall Water & Wastewater Exams

**Friday, September 21, 2001**

**MSU-Strand Union Building, Bozeman**

**Registration @ 8:00 a.m. Examination Period: 8:30 a.m. – 12:30 p.m.**

## Water & Wastewater Operator Certification

To register for an exam, detach and return this slip with appropriate fees by September 06, 2001

	1	2	3	4	5
A – Water Distribution	_____	_____	_____	_____	_____
B – Water Treatment	_____	_____	_____	_____	_____
C – Wastewater Treatment	_____	_____	_____	_____	_____

**Name:** \_\_\_\_\_ **Operator#:** \_\_\_\_\_

**System Name:** \_\_\_\_\_

**Mailing Address:** \_\_\_\_\_

**City/State/Zip:** \_\_\_\_\_



**APPLICANTS PASSING EXAMINATIONS FOR  
FULL CERTIFICATION OR OPERATOR-IN-TRAINING  
2000 FALL WATER SCHOOL  
OFFICE EXAMS**

<u>NAME</u>	<u>CITY</u>	<u>CLASS 1's</u>
BELOBRAIDIC, Aspen	Billings	1B - OT
BROWN, Gregory	Laurel	1D - CO
BURT, Louis	Billings	1C - CO
CLARK, Stephanie	Bozeman	1C - OT
DEVINE, Patrick	Helena	1A - CO
HABEL, Patrick	Great Falls	1A - CO
JOHNSON, Dale	Billings	1B - OT
KALLSTROM, Keith	Conrad	1B - OT
KRIZEK, Boris	Billings	1C - CO
LARSON, David	Cut Bank	1B - OT
McELMURRY, Walter	Libby	1B - OT
METZGER, Les	Glendive	1D - CO
O'BANION, Bruce	Billings	1C - CO
PAINTER, Robert	Chinook	1B - OT
PENGERGRASS, Janet	Libby	1B - OT
PIERCE, Alan	Bozeman	1C - OT
RAYL, Rock	Great Falls	1C - OT
RIDGWAY, Harry	Bozeman	1C - OT
STEWART, Michael	Great Falls	1B - CO
WEGRZYNIAK, Stanley	Great Falls	1B - OT
WICKS, Jennifer	Missoula	1A - OT
ZAIC, Alvin	Fort Smith	1B - OT

<u>NAME</u>	<u>CITY</u>	<u>CLASS 2's</u>
BRIDGES, Derek	Poplar	2A3B - OT
CHAPMAN, Raymond	White Sulphur Springs	2B - OT
CORPRON, William	Kallispell	2A - CO
JOHNSON, Josh	Sidney	2A - OT
KRAUSE, E. Bradley	Laurel	2A - CO
LaMERE, Michael	Box Elder	2A3B - OT
MAXWELL, Anthony	Hardin	2A - CO
MOSBRUCKER, Steven	Hamilton	2A3B - CO
PUTNAM, James	Whitefish	2C - CO
RUSSETTE, Gilbert	Box Elder	2A3B - OT
SPENCER, Julie	Bigfork	2C - OT
SUTA, James	Cut Bank	2A - OT

<u>NAME</u>	<u>CITY</u>	<u>CLASS 3's</u>
ADAMS, Edward	Belgrade	3C - OT
BRISBO, Jacob	Havre	3C - OT
CHAPMAN, Raymond	White Sulphur Springs	3A - OT
DECKER, Scott	Chester	3A - OT
ELVERUD, Melvin	Chester	3A - OT
HOLBROOK, Danny	Billings	3A - CO
OLD CHIEF, William	Wyola	3C - OT
RAUSER, Paul	Townsend	3A4B - OT
SKILLINGS, Jerry	Libby	3C - CO
SMITH, Fredrick	Great Falls	3A - OT
STANDING ROCK, Duane	Browning	3C - OT
WICKS, Jennifer	Missoula	3B - OT

**CONGRATULATIONS** to all of the above operators who passed their examinations! The exams require considerable time in study & preparation. Passing the exam represents hard work and initiative on the part of the individual. Be sure to show your appreciation to your water and wastewater operator for working so hard to ensure that they are properly trained to care for your system.

**A=Water Distribution Operator  
B=Water Treatment Operator  
C=Wastewater System Operator  
D=Industrial Wastewater System Operator  
AB=Well Water System Operator  
CO = Certified Operator  
OT = Operator-In-Training**

<u>NAME</u>	<u>CITY</u>	<u>CLASS 4's</u>
ARMSTRONG,	Alden	4AB - OT
BELOBRAIDIC, Aspen	Billings	4A - OT
CUMMINGS, David	Sidney	4D - CO
DILLON, Marilyn	Brockton	4AB - CO
EKLUND, Jay	Geraldine	4AB - CO
ENTZ, John	Sand Coulee	4C - CO
HARTFORD, Stephan	Boulder	4C - OT
HARRISON, Shirley	Rollins	4AB - OT
HAUGE, Darel	Turner	4AB - OT
JAMES, Marj	Kallispell	4AB - CO
JOHNSON, Dan	Ryegate	4C - CO
KIMMET, Dale	Terry	4AB - CO
KLEINSASSER, Ed	Cut Bank	4C - OT
KRUM, Sam	Belfry	4AB,C - CO
LAGERQUIST, Lynden	Westby	4AB - CO
LETT, Omar	Whitewater	4AB - CO
LEITHEISER, Rolland	Great Falls	4C - OT
LELAND, Ryan	Helena	4AB - OT
LOWERY, Chip	Billings	4AB - OT
MACKIE, Richard	Belgrade	4AB - OT
MARCHI, Peter	Martinsdale	4AB - OT
MATSON, Phil	Kallispell	4AB - OT
McBEE, William	Clancy	4AB - CO
McCARLEY, Mat	Helena	4AB - CO
McKeon, Brian	W Glacier	4AB - OT
McNEILEY, Mike	Fromberg	4C - CO
QUALLEY, Charlotte	Brockton	4C - OT
SPEAKER, Shawn	Dillon	4AB - OT
STALEY, Steven	Darby	4AB,C - OT
TONER, Matthew	Bozeman	4AB - CO
VANDERPAS, Charles	Bozeman	4AB - CO
WALLACE, John	Hamilton	4AB - OT
WIPF, Edward J	Martinsdale	4AB, C - OT
WIPF, Timothy	Wolf Creek	4AB - CO
WURZ, Paul	Sun River	4AB - CO
ZAHN, Richard	Twin Bridges	4C - CO
ZITZOW, Ronald	Bozeman	4AB - CO

<u>NAME</u>	<u>CITY</u>	<u>CLASS 5's</u>
ALLEN, Michael	Townsend	5AB
BURLAND, Kenneth	Lincoln	5AB
DAVIDSON, Robert	Billings	5AB
FRANKS, Bonnie	Missoula	5AB
GUINN, Charlie	Lewistown	5AB
HEWITT, Troy	Corvallis	5AB
HILTZ, Jim	Elliston	5AB
JENSEN, Larry	Ronan	5AB
MacRAE, Douglas	Livingston	5AB
MAJORS, David	Cooke City	5AB
MASINELLI, Donald	Cardwell	5AB
NELSON, Kathy	Hall	5AB
SHAW, Nathan	Missoula	5AB
SMITH, Dennis	Glendive	5AB
STOLP, Anthony	Helena	5AB
VEACH, Jimmy	Thompson Falls	5AB
VETROVSKY, David	Missoula	5AB
WILLIAMS, Brenten	Libby	5AB





# BOOKS FOR SALE

The Operator Certification Program at DEQ has the following California State University, Sacramento books for sale:

<i>Book Title</i>	Cost
Operation of Wastewater Treatment Plants, Volume II	\$25.00
Small Wastewater System Operation & Maintenance	\$30.00
Industrial Waste Treatment, Volume I	\$20.00
Industrial Waste Treatment, Volume II	\$20.00
Pretreatment Facility Inspection	\$30.00
Operation & Maintenance of Wastewater Collection Systems, Volume II	\$20.00
Water Treatment Plant Operation, Volume I	\$30.00
Water Treatment Plant Operation, Volume II	\$30.00

\*Please add \$5.00 per manual for shipping and handling.

Call the Certification Office at, 406/444-3434 to purchase a book or if you have any questions.

## ...Corner (Continued from page 19)

### Answers to Operators Corner:

- 1) 56
  - 2) Granite Peak @ 12,799 ft.
  - 3) The Sun River
  - 4) Fort Peck Reservoir (man made). Flathead Lake is 2<sup>nd</sup> largest.
  - 5) Jefferson, Madison and Gallatin
  - 6) The Clark Fork River
  - 7) The South Fork of the Flathead River
  - 8) Westby (or Fairview or Capitol)
  - 9) Monida
  - 10) Lake Frances
- 1) chlorine demand
  - 2) source (before it happens)
  - 3) 6,672 pounds of solids. Solution: Solids, pounds = (flow, MGD)(concentration, ppm)(8.34 pounds/gallon)
  - 4) 5.9 gallons. Solution: Step 1 - Pipe Volume, gallons = (0.785)(diameter, ft)<sup>2</sup>(length, ft)(7.48 gallons/cubic ft), or 734 gallons; Step 2 - Chlorine, pounds = (volume, MG)(dose, mg/L)(8.34 pounds/gallon), or 2.45 pounds chlorine; Step 3 - Sodium Hypochlorite Solution, gallons = (chlorine, pounds)(100%)/(8.34 pounds/gallon)(Hypochlorite, %)
  - 5) 45 gallons. Solution: Step 1 - Total area, ft<sup>2</sup>, to be painted = (tank top area inside and outside, ft<sup>2</sup>) + (tank bottom area inside only, ft<sup>2</sup>) + (wall area inside and outside, ft<sup>2</sup>). Tank top and bottom areas =  $3(\pi \times (\text{radius, ft})^2) = 942.5 \text{ ft}^2$ ; wall area =  $2(\text{height, ft} \times \text{length, ft}) = 12566.4 \text{ ft}^2$ ; length = tank circumference =  $(\pi \times \text{diameter, ft})$ ; Total area = 13,508.9 ft<sup>2</sup>. Step 2 - Paint, gallons = Total area, ft<sup>2</sup>/300 ft<sup>2</sup>/gallon of paint.



# MSAWWA Sponsors "ISO for Engineers" Seminar

The Montana Section of the American Water Works Association (MSAWWA) is sponsoring the seminar, "ISO for Engineers" on Thursday, March 22 in Helena at the Best Western Colonial Hotel. Montana State Fire Marshall Mr. Terry Phillips will present the training session. Prior to serving as State Fire Marshal, Mr. Phillips worked as the Insurance Service Office Field Representative.

The seminar will provide engineers with an understanding of the design of fire flows in public water systems. The workshop will offer some tools for engineers to be "intelligently conservative" in designing public water systems with fire flows. This one-day seminar is geared for professional engineers, consultants, utility engineers, and public works directors.

## AGENDA:

9:00	Welcome and introductions
9:30	ISO, a brief history, functions, and relationship to insurance companies
10:30	Break - coffee and rolls
10:45	Point rating system, water systems, and fire fighting
12:00	Lunch
1:00	Divergence - when water system exceeds fire fighting capacity
2:15	Break - coffee and pop
2:30	Design Examples: design criteria, fire flows vs. sprinklers, and community types
4:00	Wrap Up, Q&A
4:30	Adjourn

## REGISTRATION:

Early registration fee - \$50.  
Late registration after March 14 - \$75.  
Registration includes lunch.

Please send registration to:  
MSAWWA ISO SEMINAR  
Attn: Mr. Scott Murphy  
Morrison- Maierle, Inc.  
PO Box 6147  
Helena, MT 59604

406/442-3050  
FAX/442-7862  
email: [smurphy@m-m.net](mailto:smurphy@m-m.net)

## 2000 Bahr Award Presented to MWEA & MSAWWA



Karen Sanchez, left, and Donna Jensen, right, accept the Bahr Environmental Training Award on behalf of the Montana Water Environment Association (MWEA) and the Montana Section of the American Water Works Association. (MSAWWA), respectively.

The Bahr Environmental Training Award, which honors volunteers who contribute their time and effort to protect Montana's environment and its citizens, was presented to the Montana Water Environment Association (MWEA) and the Montana Section of the American Water Works Association (MSAWWA) at the fall water school. Karen Sanchez, Past President of MWEA, and Donna Jensen, Chair of MSAWWA accepted the awards. The award honors these two associations for their efforts to provide education on the public health impacts of poorly treated wastewater and the need for safe drinking water. Members from the associations were instrumental in starting the annual fall school at Bozeman. MSAWWA has held technical training programs for the past 75 years and jointly with MWEA for the past 56 years. Members from both associations have held positions in Montana's health and environmental departments and jointly helped create the operator certification program. These two outstanding groups have been active in providing professional development for engineers, consultants, public utility managers, government officials, and other environmental professionals. Thanks from all of us!



# MWEA PRESIDENT'S MESSAGE

by Mike Jacobsen

My term as President of the Montana Water Environment Association (MWEA) has reinforced my admiration of this association and its members. I have found that both our local Montana and national members are extremely dedicated and are eager to share their experiences and other information. The organization allows an easy means to meet peers, learn from various speakers and vendors, and be exposed to numerous publications and other learning materials. Please consider this opportunity to join MWEA if you are not already a member. Or, join us at this year's conference in April and see for yourself what you are missing!

The annual MWEA/MSAWWA joint conference will be held in Butte on April 18-20, 2001. We have an excellent pre-conference and conference planned. As always, the conference will be a great learning experience for all of us and a chance to get together with old friends. I hope all of you are making plans to attend!

## MWEA MISSION STATEMENT:

The Montana Water Environment Association is a non-profit organization dedicated to the preservation and enhancement of Montana's water environment. The Association is committed to advancing science and education, disseminating technical information, increasing public understanding, and promoting sound public policy in the water quality and water resources field. To join, contact: Michael Jacobson

# JOINT CONFERENCE UPDATE

The joint MSAWWA/MWEA Conference will be April 18-20 at the Ramada Copper King Inn in Butte. The pre-conference, hosted by MWEA, will focus on wetlands. The main conference will have a diverse group of speakers that will address many relevant issues (see agenda on pages 26-27). The three concurrent sessions will be held on Thursday afternoon and Friday morning. In addition, we will visit an artificial wetland site Frida morning. The host city promises to provide some outstanding entertainment (possibly even a pig roast on Thursday night). Registration forms will be sent soon. Hope to see you there!

## MWEA & MSAWWA Conference News

The 2000 Conference held in April in Helena was an unqualified success. We had about 190 folks who attended, including over 26 manufacturer representatives. Combined with the many technical sessions, there were plenty of opportunities to interact with fellow water and wastewater professionals from all areas of Montana (and a few from outside our boundaries). These two organizations serve as a focal point for those of us working in the public utility field. We strongly encourage fellow operators to join us as we organize public education activities, recognize quality operation, maintenance, engineering and management efforts with state and national awards, and plan for the future of water and wastewater systems.



## WATER

# ENVIRONMENT FEDERATION Bookstore Program

**If you are planning on purchasing a WEF publication: WAIT!!!!!!**

WEF will reimburse the Montana Water Environment Association (MWEA) 40% of the purchase price within 60 days after the meeting if you purchase the publication at the JOINT CONFERENCE in Butte!!

MWEA will have a special WEF BOOKSTORE TABLE set up at the Conference that will provide you with an opportunity to preview ten of WEF's most recently published Manuals of Practice and Special Publications.

Here's how: Specially coded order forms will be available at the Butte Joint Conference WEF BOOKSTORE TABLE. MWEA will receive a rebate for every publication you order using these specially coded forms. Use WEF's member and non-member prices accordingly, fax or mail the special order forms to WEF's Publication Order Department within 60 days of the Conference. It's that easy!



# MSAWWA/MWEA Joint Conference Preliminary Agenda

## *Rocky Mountain Water- Keeping It Pure*

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### Preconference, Wednesday, April 18

#### **“Natural Treatment of Wastewater and Nutrient Removal”**

Dr. Woody Reed, a nationally recognized expert on artificial wetlands, will discuss wetlands treatment process theory, performance expectations, design procedures, construction methods and costs, and present a few case studies on selected wetland systems. Dr. Reed designed numerous wetland systems throughout the United States, authored several books and papers on the subject, and most recently completed a design manual on wetlands for the Water Environment Federation (WEF). In addition to Dr. Reed, Mr. Paul Lavigne of DEQ will present the draft state wetland design guidelines and will outline the performance of the wetland treatment system recently constructed in Ronan, MT. Mr. Michael Lutz of Integra Engineering in Colorado will present a paper on mechanically aerated pond systems followed by wetland polishing systems. Mr. Lutz designed and constructed several of these systems in Colorado and has collected performance data on them. This data will be presented at the pre-conference along with a discussion of his design methodology. Other speakers will present additional wetland case studies and cold weather performance data.

8:30-12:15	Dr. Woody Reed, Wetlands Expert, Vermont – Wetland process theory, performance, design and construction
1:30-2:30	Paul Lavigne- DEQ Design Standards for Wetlands and Wetland Performance Data for Ronan, MT
2:30-3:00	Michael Lutz, Integra Engineering, Colorado – Colorado Mechanically Aerated Ponds followed by Wetland Polishing, a Case Study
3:15-4:15	Cold Weather Wetland Treatment System Case Studies
4:15-4:30	General Discussion and Pre-conference Adjournment

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### Joint Conference, Thursday, April 19

#### **General Session**

8:00-8:30	Opening Session
8:30-9:30	NRCS Reclamation of Fire-Affected Watersheds in the Bitterroot Valley
9:30-10:00	Break
10:00-10:30	Donna Jensen, Cadmus Group, Historical Perspective of Montana Health Protection
10:30-11:15	Jim Ginley, AWWA, QualServe
11:15-12:00	Vendor Expo
12:00-1:30	Lunch and Scholarship Awards

#### *Afternoon Concurrent Sessions:*

#### **Water Session**

1:30-2:00	Tim Chen, HDR, Arsenic Rule Update
2:00-2:30	Dr. YuJung Chang, HDR, AWWARF Arsenic Research Project Update including iron coated sand and ferric media
2:30-3:00	Break/Vendor Expo
3:00-3:30	Dr. YuJung Chang, HDR- AWWARF Arsenic Research Project Update (continued)
3:30-4:00	Dr. Laurie McNeill, Utah State University- Arsenic Removal Options: Conventional vs. Advanced Treatment Technologies
4:00-4:30	Boris Krizek, City of Billings- Arsenic Removal Pilot Studies in Billings

#### **Wastewater/Water Session**

1:30-2:00	Pat Burke and Dan Barbeau, Montgomery-Watson, Sludge Centrifuge at Great Falls WWTP
2:00-2:30	Paul Montgomery, Montgomery-Anderson Consulting, Biosolids Beneficial Use
2:30-3:00	Break/Vendor Expo
3:00-3:30	Ed Casne, Casne & Associates, Recirculating Sand Filter, Flying J, Billings
3:30-4:00	Dan Fraser, Cadmus Group, Rule Update (LT1, Groundwater Rule, LT2, Radon, Radionuclides, DBP)
4:00-4:30	Wayne Enyard, Ponds Rx Us, Troubleshooting Lagoons and the Application of Low-Cost Aeration



**Non-Point Source Session**

<b>1:30-1:50</b>	Ron Tupling, Graduate Student, Montana Tech, High Ore Creek Post Water Quality Reclamation
<b>1:50-2:10</b>	Jeff Kuhn, Montana DEQ, Natural Attenuation Potential of MTBE at the Ronan LUST Trust Site
<b>2:10-2:30</b>	Kate Miller, Montana Bureau of Mines and Geology, Groundwater Flow and Pesticide Transport in Public and Private Drinking Water Supplies on the Fairfield Bench
<b>2:30-3:00</b>	Break/Vendor Expo
<b>3:00-3:20</b>	Vivian Drake, Drake Engineering, Analysis of Helena Valley Groundwater Nitrate Concentrations over the Past Decade
<b>3:20-3:40</b>	Ron Drake, Drake Engineering, Occurrence and Location of Nitrate in Groundwater
<b>3:40-4:00</b>	Mary Ann Harrington Baker, MSE, EPA Mine Waste Technology Program
<b>6:30</b>	Social Time and Entertainment
<b>7:00</b>	Banquet and Awards Recognition

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**Joint Conference Continued, Friday, April 20**

**7:30-9:00**      Joint Membership Meeting

**Morning Concurrent Sessions****Water Session**

<b>9:30-10:00</b>	Paul Klatt, JUB Engineering, Water System Modeling:Traps and Tips for Making it Useful
<b>10:00-10:30</b>	Steve Kroll, Zenon Environmental Systems, Application of Immersed Ultrafiltration Membranes on High Turbidity and High TOC Waters
<b>10:30-11:00</b>	Dr. John Clark, Sear-Brown Group, Cold Water/Small Community Membrane Filtration Case Study (Meeteetse, WY)
<b>11:00-11:30</b>	Boyd Hicken, Morrison-Maierle, Ballasted Sand/Actiflo System, Conrad

**Wastewater/Water Session**

<b>9:30-10:00</b>	Dr. John Clark, Sear-Brown Group, Advanced Integrated Pond System Design and Upgrade Case Study (Mead, CO)
<b>10:00-10:30</b>	Amanda McInnis, HDR, Membrane Bioreactor Survey for Operation Optimization and Operator Friendly Design
<b>10:30-11:00</b>	Gary Fuller, HDR, Innovative Use of Microtunnelling to Construct Lake Intake and Pump Station
<b>11:00-11:30</b>	Bill Buxton, Morrison-Maierle and Steve Ruhd, City of Conrad, Sewer Main Replacement Using Pipe Bursting

**General**

<b>9:30-10:00</b>	Mark Cunnane, Application of Earth Resistivity to Wellfield Development
<b>10:00-10:20</b>	Michelle Fox, METC, GIS and Groundwater
<b>10:20-10:40</b>	John Tubbs, DNRC, Fort Peck Project Update
<b>10:40-11:00</b>	Jesse Aber, DNRC, Drought Management Case Study, City of Helena
<b>11:00-11:30</b>	Scott Anderson, Montgomery-Anderson Consulting and Dave Aune, Damschen-Entranco, Scoring with Funding Agencies- Preliminary Engineering Report Do's and Don'ts

**Site Visit**

<b>9:00-11:30</b>	Artificial Wetlands Site and Montana Post & Pole Site visit
<b>11:30</b>	Luncheon and Prize Drawings
<b>12:30</b>	Conference Adjourns

.....



# Rocky Mountain Water

## Keeping It Pure

2001 MWEA/MSAWWA JOINT CONFERENCE

April 18-20 - Ramada Inn Copper King

Butte, Montana

### REGISTRATION

Preconference - April 18

\$85

\$ \_\_\_\_\_

*includes all preconference sessions and lunch*

Conference - April 19-20 *(fee does not include Preconference)*

*includes all conference sessions, two lunches, banquet and entertainment*

Members postmarked before March 16  
postmarked March 17 or after  
life members

\$125

\$150

\$60

\$ \_\_\_\_\_

Nonmembers\* postmarked before March 16  
postmarked March 17 or after

\$155

\$175

\$ \_\_\_\_\_

\*If you'd like to join one or both of these associations, please call 406-443-5388  
for information and applications. You can then register at the member rate.

Companions

\$40

\$ \_\_\_\_\_

*includes companion program and Thursday banquet*

Students

\$25

\$ \_\_\_\_\_

*includes conference sessions and lunches*

Each additional lunch ticket (indicate number)

\$15

\_\_\_\_\_ tickets @ \$15 each

\$ \_\_\_\_\_

Each additional banquet ticket (indicate number)

\$30

\_\_\_\_\_ tickets @ \$30 each

\$ \_\_\_\_\_

Total amount of registration

\$ \_\_\_\_\_

*All registrations postmarked by March 16 are eligible for the Early Bird Prize Drawing.*

Make checks payable to MWEA/MSAWWA.

Mail this registration and your check to:

MSAWWA/MWEA Annual Conference

505 South Roberts

Helena, MT 59601

For further information, call 406-443-5388

Fax 406-443-5388 *(changed from last year)*

E-mail tygrmgmt@onewest.net *(changed from last year)*

Approximately 1.10 continuing education credits  
are offered for attendance at the conference and preconference.  
You'll receive information and forms in your registration packet  
when you check in.

For lodging call the Ramada Inn Copper King at  
1-800-332-8600. Rooms are set aside until April 10.

Name (as you'd like it on your badge) \_\_\_\_\_  
(First) (MI) (Last)

Member # \_\_\_\_\_ MSAWWA MWEA (Circle One) Title \_\_\_\_\_

Organization \_\_\_\_\_

Mailing address \_\_\_\_\_

Phone \_\_\_\_\_ (City) Fax \_\_\_\_\_ (State) (Zip) Email \_\_\_\_\_

Companion name \_\_\_\_\_  
(First) (Last)



# MWEA Director's Report

By Scott Anderson

As Director of Montana Water Environment Association (MWEA), I attended the WEFTEC conference in Anaheim, CA. Anyone working in the industry would benefit from attending this conference, considered the "World's Fair" of the sewer world. This Water Environment Federation conference included the two Board of Directors meetings held before and after the technical conference on October 14<sup>th</sup> and 18<sup>th</sup>. The following information is provided on some of the issues discussed in the Board meetings:

**2001 Budget** – The upcoming WEF budget amount for 2001 is \$19,095,545. Income is estimated to be about \$19.2 million dollars, which is similar to the 1998 income level. In 1999 the income was \$18.8 million and 2000 was estimated at \$19.3 million, staying at a level amount whereas costs are increasing. The Federation has taken a number of steps to reduce costs and increase income, including the controversial measure to increase of membership fees by \$3 for active members and \$2 for operators. This increase generated considerable discussion but was approved by the Board of Directors. **Montana's membership costs will increase by this amount, at a minimum.**

**The Small Member Association Task Force** is a task force assigned to evaluate methods to strengthen and support small member associations, such as Montana. The task force identified a number of problems facing small associations, including the financial state. The Federation is considering ways to help small associations through revenue

sharing on memberships, book sales, business development and other means of strengthening membership and support the financial basis required in a small MA. **Montana has already benefited from this assistance in the Leadership Training provided to the MWEA Board this fall.**

**WEFTEC conference sites** have rotated among six cities throughout the country. Due to growth in the size of the conference, the sites may be limited to two locations in the future. WEF has proposed special arrangements to hold the conference in two – New Orleans and Chicago. WEF has brokered a deal with these cities, thus allowing for more favorable costs to the organization in holding the conference thus generating more profit from the conference. Also, vendors prefer these two areas due to the large industrial base. While there was some concern about the location and lack of national coverage, the Board of Directors approved the two-city rotation, starting in 2010.

**Partnering Agreement with NSPE:** WEF signed an agreement

with the National Society of Professional Engineers to collaborate on education, water quality, and regulatory or legislative issues. This agreement encourages joint meetings and pricing reciprocity policies at conferences and technical meetings. **MWEA should consider furthering joint efforts in Montana to the benefit of both organizations.**

**Quarter Century Operators Club** is an award given to operators who have worked in the water environment industry for 25 years with 10 of those years as an operator and 5 years as a member of WEF. This award is very popular in those states where it is given regularly. **MWEA should promote this award as a way to honor long-term operators as well as to help retain members in the Association.**

This was my last WEFTEC conference as the Director of MWEA. I appreciate the opportunity to attend this conference and I would like to thank the MWEA Board and the membership for sending me!





# WEF Provides Leadership Training

by Karen Sanchez

Water Environment Federation Small Member Association (MA) officer Phyllis Eastman from Alexandria, VA provided Leadership Training to MWEA and MSAWWA board members and committee chairs last September. WEF provided the training, held during the annual Fall Water School at MSU-Bozeman, as a follow-up on issues discovered during the Small MA Assessment that Phyllis conducted via telephone with MWEA leadership in 1999.

Small MA's have less than 200 members and account for only nine of the 77 WEF MA's in the US and Canada. Worldwide, however, there are 23 small MA's. Due to the special needs and problems of small MA's, the WEF Board of Directors (BOD) decided to focus on leadership training activities for these small associations.

The training included discussion of the 1999 Assessment results. The participants worked to match challenges that MWEA faces with available WEF resources. Some conclusions that came out of the training include: MWEA is a solid organization, with a defined mission and long range plan. One of MWEA's goals is to attract and retain membership through the tracking of membership trends. MWEA has a specific budget and is financially sound. The organization builds and maintains solid relationships with other organizations, and, common to most small MA's, is characterized by a small number of volunteers doing a majority of the work.

During the two-day workshop, MWEA leaders identified these STEPS toward self-sufficiency and sustainability:

- Encourage committees to be more active.
- Develop sources of revenue or income.
- Entice & recruit more members and leaders.
- Develop a business or activity plan to guide the organization, to meet goals.

Following are several WEF initiatives that are available to help MWEA achieve the steps listed above.

1) WEF will rebate 40% of WEF Bookstore purchases to the MA for 60 days during and following the MA annual meeting. 2) WEF will partner with an MA to hold a Specialty Conference. However, along with the shared revenue, are and associated workload and risks. 3) WEF has proposed a membership "rebate" program to Small MA's for new member retention. 4) For a small fee, WEF will provide an E-service web magazine directed toward academics. 5) WEF can assist MA in locating speakers for conferences. Other issues discussed were the Professional Wastewater Operators Division (PWOD)

membership (not currently supported within WEF, but each MA can create its own membership

category), and video downlink conferences, similar to AWWA events. (These are not currently being considered by WEF, but MWEA leaders encouraged WEF to reconsider).

Phyllis noted that a common challenge experienced by most volunteer organizations is the shrinking pool of volunteers, because of many competing interests, leading to a handful of volunteers doing most of the work. This problem may be particularly critical for small MA's. She shared some the following suggestions: 1) Focus on one or two initiatives that provide the greatest opportunity for success. 2) Develop an action plan and timeline for implementing the initiatives. 3) Communicate regular progress on the initiatives to the MWEA membership. 4) Promote volunteerism as an opportunity to develop new skills. 5) Create an environment that invites and encourages members to express new ideas. 6) Recruit volunteers to work on initiatives and achieve goals. 7) Assist volunteers in these efforts. 8) Reward volunteers with thanks and recognition to remind them of their valuable contributions.

Some specific ideas that the MWEA Executive Board voted to enact for more effective use of volunteers include:

- List the association's mission & goals at the top of every agenda
- Thank committee chairs and members
- Identify chairs that are not board members.
- Have the board identify new committee members and chairs to avoid the appearance of a "closed" network, and to keep roles clearly defined.



If you are interested in volunteering, please consider signing up on a committee. Volunteering is a good way to learn about MWEA and to develop new skills. You will be asked to help MWEA reach specific goals, not asked to do more than you can handle, AND you will be APPRECIATED AND THANKED!!



## ... History (Continued from page 1)

Roman aqueducts were built in 312 B.C. Perhaps the earliest water operator was Sextus Julius Frontinus, the *curator aquarum* or water commissioner of Rome in 97 A.D. By that year nine aqueducts supplied Rome with 85 million gallons per day. Early aqueducts were built out of stone or were simple trenches and later the Romans began to use concrete in their civil works projects that included aqueducts. Official buildings, public baths, fountains and the residences of the more elite Romans were supplied with water from an elaborate water supply system from collection to distribution. Water taxes funded this system with the elites paying a premium for their individual services. By the third century A.D., an estimated one million Romans were using about 250 million gallons per day supplied through 11 aqueducts.

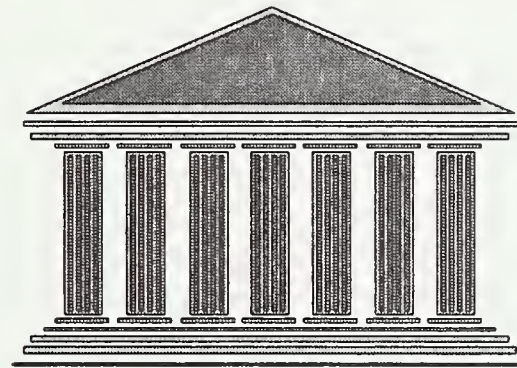
Since these early beginnings we have developed sophisticated drinking water systems to treat, distribute, and store water. We can remove and inactivate disease-causing micro-organisms (barely guessed at in ancient times) that cannot be seen by the unaided eye. We can also treat water to make it more aesthetically pleasing (such as removing hardness). Today most of us in developed countries have the luxury of a very dependable supply of safe water delivered to our homes. To rely on the continuation of this dependable

supply of water, society has set up methods and procedures to ensure consistency in the design and operation of water systems.

Certainly our society can see the importance of civil works to ancient and present day civilizations. These works are so much a part of the establishment in developed countries that people may become complacent about them. Nevertheless, it is through the hard work of individuals and communities, including people from both the private and public sectors, that these civil works continue in their valuable functions to society.

All persons involved in civil work can take pride in knowing that their professional work is important to society.

Equally, all persons can take pleasure in knowing that their work can be traced to the earliest beginnings of civilization.



## ... Climate (Continued from page 1)

scarce water during a time of shortage. Many scientists have posed the questions: "Is our climate changing And, if so, how is it changing? Is the recent trend toward warmer, dryer winters a normal variation in weather or is it evidence of climate change? If climate change is occurring, is it caused by human actions or is it just part of a natural climate swing?"

These questions have been the subject of much controversy, especially regarding the impact human activities have had on forests, greenhouse gases and the ozone layer in the atmosphere. Rather than focussing on the causes of climate change, some recent research has been directed towards the effects climate change might have on water quantity and quality, particularly in the northwestern United States, where water plays an important role in the regional economy.

Any climate change that increases the frequency or severity of floods are likely to increase the risk of contaminated source water. In the September 2000 issue of the Journal of the American Water Works Association, Joan B. Rose and her fellow researchers described how they used a geographical information system (GIS) to show a link between floods and waterborne disease outbreaks. Both groundwater and surface water sources were associated with these outbreaks. Public water systems may want to consider what could be done to protect their source water if flooding

became more frequent or severe. A well-thought-out emergency plan is a good tool in preparing for emergencies such as flooding.

On the other hand, climate in the Northwest may be headed toward warmer, dryer winters, leading to more frequent and severe droughts. Much has been said of the two best known phenomena, El Nino and La Nina, but other global weather oscillations have also been observed. One affecting the Pacific Northwest is called the Pacific Decadal Oscillation (PDO) that results in either a cool, wet or warm, dry period lasting 20 to 30 years. When combined with an El Nino occurrence, for example, a warm, dry PDO greatly increases the impact on weather, leading to unusually warm, dry winters and springs. Conversely, a La Nina occurrence coinciding with a cool, wet PDO leads to extremely wet, cold winter and spring weather. Both of these events have implications for the operation of a public water supply.

Climate change would have many impacts on human activities, including agriculture, forestry, recreation and other land uses. However, changes affecting water supplies would likely be the most immediate and severe effects of long-term climate change. Planning for the possible impacts of climate change is prudent for anyone involved in ensuring a safe, dependable community water supply.



# MONTANA

University System

101 Huffman Building  
Montana State University  
Bozeman, Montana 59717

## WATER CENTER

<http://water.montana.edu/training>

## "OPERATOR BASICS" Training Series: Ground Water Systems

The Montana Water Center is developing an interactive training series for small public water systems. Targeted at state and tribal water operations, population 500 or less, this training will provide operators and managers with the information they need.

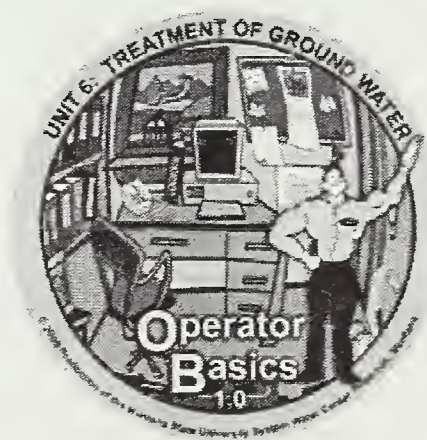
You can work through activities and games designed to enhance skills necessary for the proper operation of a small water system. Give it a try online at: <http://water.montana.edu/training>

"Operator Basics 1.0" consists of two primary training tools:

### **UNIT 6: TREATMENT OF GROUND WATER MATH QUIZ / PRACTICE: Levels 1 & 2**

\*The final version of "Operator Basics" - *Ground Water Systems* (11 Units) is scheduled for release in December.

2,500 copies of this public document were published at an estimated cost of 62¢ per copy, for a total cost of \$1,550.00, which includes \$1,550.00 for printing and \$.00 for distribution.



Montana Department of  
**ENVIRONMENTAL QUALITY**

Planning, Prevention and Assistance Division  
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